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The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry

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The OIL WEEKLY

ENGINEERING • NEWS • STATISTICS

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LOOKING AHEAD
... with the Editor

HUBERT Guyod's electrical well logging series, published in THE OIL WEEKLY in 1944, was widely received by oil men in all parts of the world.

Further articles on this subject, this time on "Electric Log Interpretation," has been prepared by Guyod for publication in THE OIL WEEKLY. The first series was a detailed discussion of the principles underlying electrical well logging. The aim of the present series is to show how these data can be put to practical use for the location of petroleum reservoirs. For the sake of completeness, some of the discussion offered in the first series is summarized in the forthcoming articles.

The result of recent research has been embodied in the present work so that this treatment, although much modified, is an up-to-date presentation of electric log interpretation.

Part of the data was presented last spring before the Jackson, Mississippi, and Houston, Texas, Geological Societies.

The first of Guyod's new articles will appear soon.

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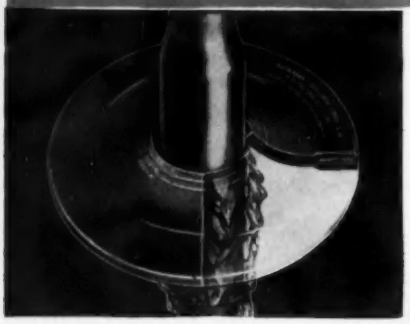

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The Changing Panorama

Humble Faces Future With Confidence

THERE is timely reassurance for the industry in the confident attitudes with which some of the oil companies are planning and working for the future. Such a spirit of confidence and underlying optimism is evidenced, for example, in the planning of the Humble Oil & Refining Company, largest domestic producer of crude oil, as revealed in the September-October issue of the company's magazine, *The Humble Way*.

In an article on "Looking for Tomorrow's Oil," it is revealed that the company intends to lose no time in immediately intensifying all efforts necessary for finding large new reserves that will be needed in a vigorous postwar era of industrial development. Aside from this long-range objective, states the article, increased exploration and drilling will serve the immediate ends of replacing unusual withdrawals from the company's reserves during the war and of providing jobs for returning veterans.

In projecting its drilling program for 1945, a difficult goal was set, in view of the manpower shortage, and while fulfillment of the program might not have been possible otherwise, the end of the war gives promise that the schedule may be completed and maintained into 1946, with benefit of returning veterans and released war industry workers. The company was able to drill only 28 wildcats in 1941 and 29 in 1942, but increased the number to 96 in 1944 and will complete about 120 this year. Improved equipment and drilling methods have helped to make more wildcatting possible.

Humble's active wildcatting will require expansion of all related activities, including geophysical exploration; geological work in finding structures and supervising wildcat wells; land and leasing work such as assembling blocks of leases, pooling acreage, curing titles, and working out contracts.

Compared with 3,549,000 acres under lease in 1928 the company now has about 17 million acres and by the end of 1946 will have 18 million. The company's interest in the Southeastern States is perhaps prophetic of important developments there in the years to come, and is evidence at least of this efficient and successful company's confidence that large crude reserves await discovery by those determined to find them. Although Humble extended operations to the Southeastern States only a few years ago, it had more acreage under lease in that region at the end of 1944 than it held all together in 1938. In Florida alone it now has more than all of the company's holdings 12 years ago.

Exploration work now includes 11 reflection seismograph crews and one refraction crew, a 50 percent increase over the activity of 8 reflection crews working prior to early 1943. In 1944 the company made producers of 20 percent of its wildcats drilled, against a 13 percent rate for the whole industry, and it expects that reserves proved up this year will at least replace the year's heavy withdrawals and perhaps contribute toward an increase which is needed for tomorrow's greater requirements.

While intensive exploration will be carried out, the company pointed out that the cost of finding new oil is rapidly increasing, due to necessity of drilling deeper and because a higher proportion of all wells drilled must be wildcats, all of which are relatively expensive and many of which are dry. Humble's wildcats averaged 7480 feet in depth in 1940 and in the first half of this year averaged 8007 feet, while the average for field wells increased from 5437 to 6783 feet. Cost of drilling 626 wells in 1940 was less than $17 million; about the same number this year will cost $56 million.

That No-Profit Claim Of Country's Co-Ops

IN THE OIL WEEKLY of November 12 a story from Washington on the Anglo-American oil agreement quoted Howard Cowden, co-operative leader, as pointing out that in this country nine regional co-operatives own eleven refineries using 60,000 barrels per day of crude oil, own more than 400 oil wells and 1100 miles of pipe lines. Cowden prophesies that eventually a proposed "International Co-operative Petroleum Association" will operate its own oil fields, etc., selling oil at no-profit throughout the world.

What Cowden did not mention is the fact that the co-operatives escape taxes paid by the other oil companies and that if all of the operations of this country were on the basis of the co-ops, the citizens of this country would have to dig deeper into their pockets to provide tax funds which the co-ops ought justly to pay.

THE OIL WEEKLY does not believe that Cowden is on sound ground in his general statements as quoted in last week's issue and thinks that the law makers of this country, if they are so interested in investigating, might well look into the "no-profit" claim of the co-ops.

New Anglo-American Oil Agreement

AS INDICATED in THE OIL WEEKLY and the daily press of last week, some opposition to the Anglo-American oil agreement has developed since the document went to the U. S. Senate.

Much was made of the discrepancy between the text presented to the senate and the text printed in the daily and trade press prior to the appearance of the official text in the Senate. Investigation revealed that no dirty work at the cross-roads had been done—that an error had been made by PAW in releasing a text other than the one officially adopted at London.

Last week THE OIL WEEKLY printed a statement by George A. Hill, Jr., one of the London conference consultants, who voiced strong opposition to the original Anglo-American oil agreement presented more than a year ago.

Hill seems to us to have cleared up thoroughly doubt as to what the new agreement will do if enacted into a treaty. We have read his statement carefully, have discussed it with him and others and are of the considered opinion that the objections being raised against it are not valid and that the agreement will do no harm to the domestic oil industry, independent or major, in the United States.

We think that it has possibilities of improving the exploratory and development situation of American oil companies abroad.

As to the claim that the agreement, if ratified into a treaty, will be the occasion of an attemp at legislation to regiment the oil industry of the United States, we do not doubt that at various times in the future attempts will be made to regiment the oil industry and even to nationalize it, but we do not believe that these attempts will be aided by the treaty.

Pressure Maintenance

Midway Field, Arkansas

CONSIDERABLE interest is manifested toward poolwide application of pressure maintenance by water injection as a means of adding to the recovery from oil and gas fields. Data obtained at Midway disclose conclusive results, and confirm indications which were outlined before a meeting of the Division of Production of the Institute at Chicago, November 11, 1943.[1] Since that date pressure, production, and cost records have been accumulated—which may be deemed of timely importance. The earlier publication referred to, showed that injection into one well, located at the edge of a pool, 1800 acres in area caused a marked decrease in the rate of pressure decline in the pool. Since then injection has been maintained in four wells, with the result that reservoir pressures have risen—although during the same period allowable and withdrawal rates have been increased substantially.

Pool Conditions

The pool contains 41 producing wells which were completed between January, 1942, and December, 1943. Eight wells, initially of low productivity, are equipped for artificial lift. A productive area of approximately 1800 acres is shown to be located on an anticlinal structure (Figure 1), and has been found by several independent methods to contain approximately 150 million to 160 million barrels of stock-tank oil in place. There is no gas cap, the oil being uniformly saturated with gas at a pressure of 2528 pounds per square inch, gage, a pressure which may be compared with the pool average of 2674 psi on July 1 and 2920 psi at discovery.

The original limits of the pool appear to be defined roughly by contact of the top of the porosity with the datum of 6225 feet below sea level. In several instances the water-oil contact appears to have been higher, and in some cases lower.

The estimate of about 160 million barrels of stock-tank oil originally in place has been made on a basis of porosity and acre-feet of formation. This value is in close agreement with the value determined by W. A. Bruce in a summary published of the results of his analysis of the pool-performance history.[2] The position of the oil with respect to the water underlying the pool is shown diagrammatically by a cross-section drawn north and south across the center of the pool (Figure 2). Logs of wells drilled through the oil column indicate that the formation is generally permeable and water-bearing at all points below the oil-water contact throughout the pool. External energy for maintenance of pressure in the pool is believed to be transmitted to the pool primarily through the underlying water. Poolwide contact of the water table with the oil contained in the reservoir appears to facilitate communication of pressure throughout the pool.

Pressure-Production History

On January 14, 1942, the initial reservoir pressure for the pool was determined to be 2920 pounds per square inch at 6050 feet below sea level, and by May 25, 1943, had fallen 261 psi to a value of 2659 psi. The reservoir oil has a bubble-point pressure of 2528 psi, gage, and a compressibility of 15.0 barrels per million barrels per pound per square inch pressure at reservoir conditions.

Factual data published by the Arkansas Oil and Gas Commission[3] state that, for the three months' period ending May 25, 1943, "The greatest decrease in pressure among the water-driven oil fields was experienced at Midway with a drop in pressure of 0.56 psi daily."

During that three months' period average production of oil was approximately 5600 barrels per day. Injection was commenced April 19, 1943, and the record shows influence of injection on the pressure-production history (Figure 3). Data published by the commission (July, 1945) show that, for the first six months of 1945, reservoir pressures increased 0.09 psi per day, whereas oil production had been raised to an average of more than 6900 barrels per day. Constant allowables were granted for an extended period. This fact aided greatly in interpreting results of injection. On February 1 the daily base allowable per well was increased from 175 barrels per day to 200 barrels per day. The average oil-production rate during August, 1945, exceeded 7500 barrels per day.

In addition to the oil recovered, liquids extracted by the gasoline plant averaged 23,700 gallons daily during the same month. Design and operation of the plant are facilitated by the richness of the gas, steady allowables, and constant gas-oil ratio.

Distribution of Pressure

With few exceptions since injection began, reservoir pressures have been measured monthly on one-third of the wells in the pool. The pressures of no individual wells appear abnormally high as a result of injection (Table 1). An examination of all the pressure data since injection started discloses that a transient effect is noticeable on producing wells around injection wells. During the first 30 to 60 days after injection commences or has been increased markedly, reservoir pressures measured in the offset wells increase at rates above the pool average, and thereafter the pressures observed return to a position in line with the remainder of the wells. Wells offsetting injection wells likewise are noticed to be only average producers of water. In August, 1945, oil wells nearest input wells Nos. 1, 2, 3, and 4 produced (respectively) the following percentages of water: 0.3, 6.0, 2.8, and 2.0. During the same period it is estimated the pool production averaged 12 percent water.

TABLE 1

Reservoir-Pressure Distribution—Midway Field, Arkansas

Pressure (psi) at 6050 feet below sea level

WELL	April 1, 1944* (Feet)	June 1, 1945† (Feet)
Edgar Bond 1	2621	2687
Edgar Bond 3	2619	2693
M. F. Creek 1	2629	2673
Charles McClaine 1	2608	2687
Charles McClaine 2	2595	2667
Charles McClaine 5	2653	2684
Community Powell 1	2634	2645
Community Powell 2	2598	2605
F. C. Roberts 3	2617	2684
Roberts' Edgar Bond 1	2621	2680
W. E. Hodnett 3	2655	2670
W. E. Hodnett 7	2680	2686

* Arkansas Oil and Gas Commission Factual Data No. 36, April 26, 1944.

† Arkansas Oil and Gas Commission Factual Data No. 41, July 26, 1945.

Probable Pressure-Production History Without Injection

The oil-production rate during August, 1945, averaged over 7500 barrels daily. Total reservoir withdrawals, including shrinkage and 1000 barrels of salt water, totaled 10,000 barrels per day. Injection of at least 8000 barrels per day appears to be required to maintain pressures at present levels. Therefore, the rate of natural water drive has diminished to approximately 2000 barrels per day. On that assumption it can be computed that pressures could be maintained by restricting the rate of oil production to around 1500 barrels per day. However, it is believed that, in the absence of injection, a moderate degree of pressure decline would be tolerated by the state regulatory body, and a pool allowable of 3500 to 4000 barrels per day could be expected.

Economics

The total operating expenses for the combined pressure-maintenance and salt-water project have declined rather steadily for the past 20 months, and averaged $70 per day for the three months ending September 1, 1945. Thus it may be inferred that the additional rate of recovery is obtained economically.

Evidence of the limited amount of natural water drive tends to confirm previous estimates[3] that, through injection, and additional 35 million barrels of oil could be produced to economic limit. The anticipated increase in ultimate yield may be compared with the costs for installing pressure-maintenance and salt-water-disposal facilities. These total less than one-tenth of the aggregate cost of discovery and development of the pool.

A third advantage gained by maintaining pressures is realized in reduc-

Presented November 15 before the 25th annual convention of the API, Chicago.

By Water Injection

By WILLIAM L. HORNER
Barnsdall Oil Company

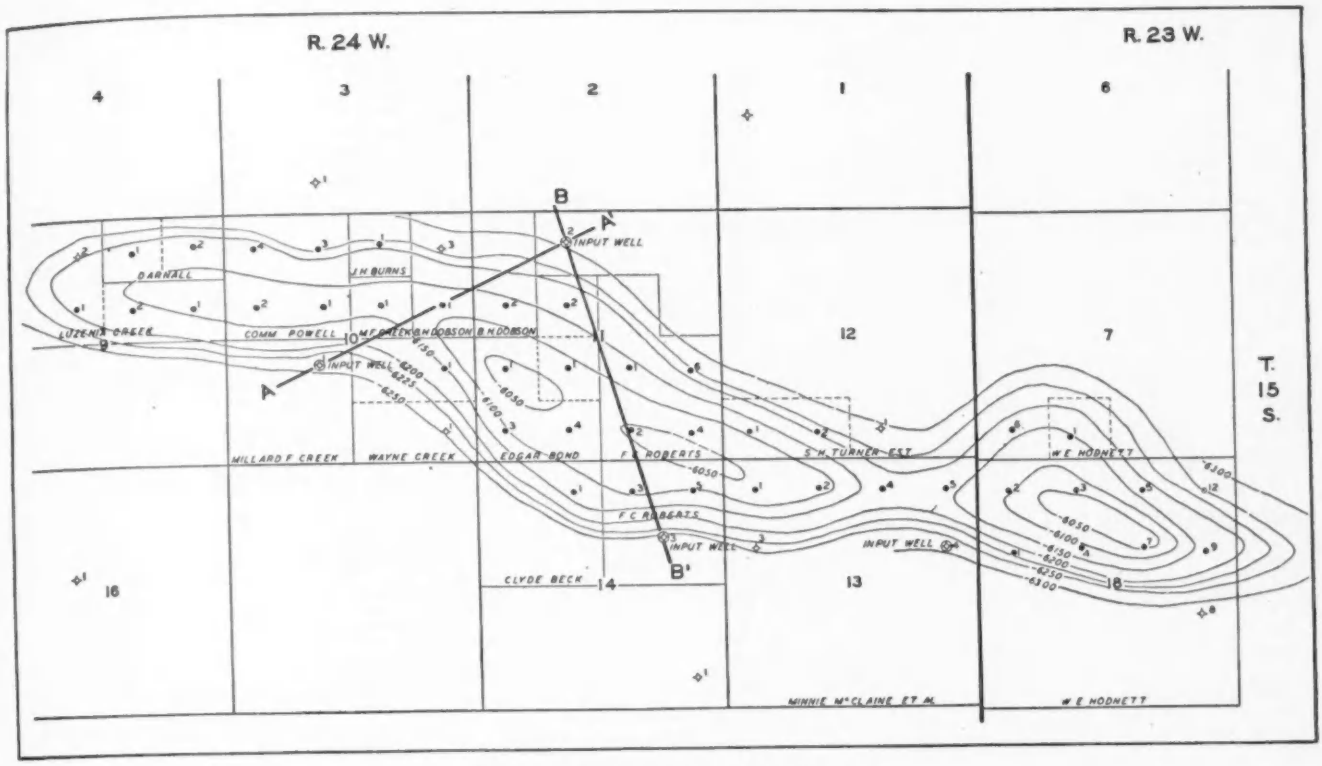

Figure 1. Contours of Midway field, Arkansas

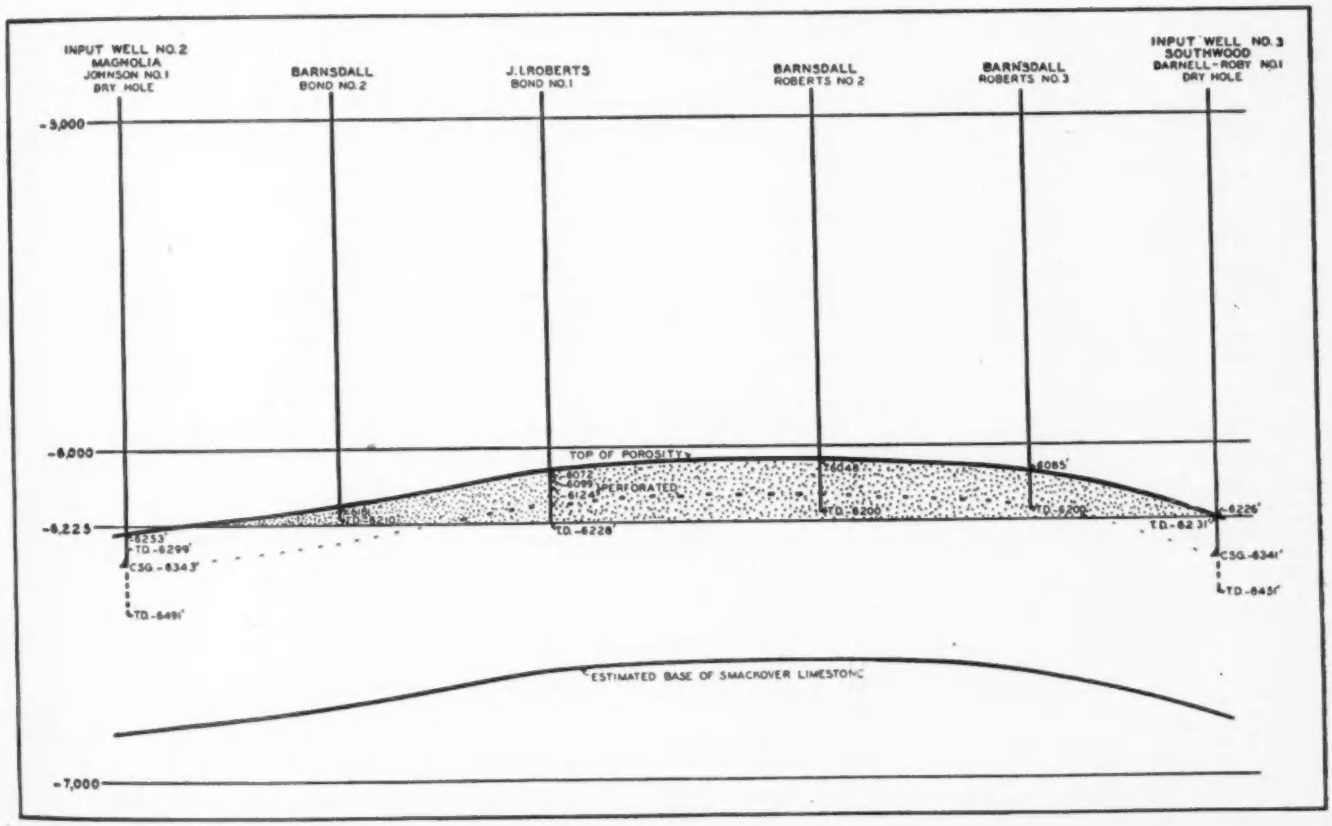

Figure 2. Cross-section of Midway field, Arkansas

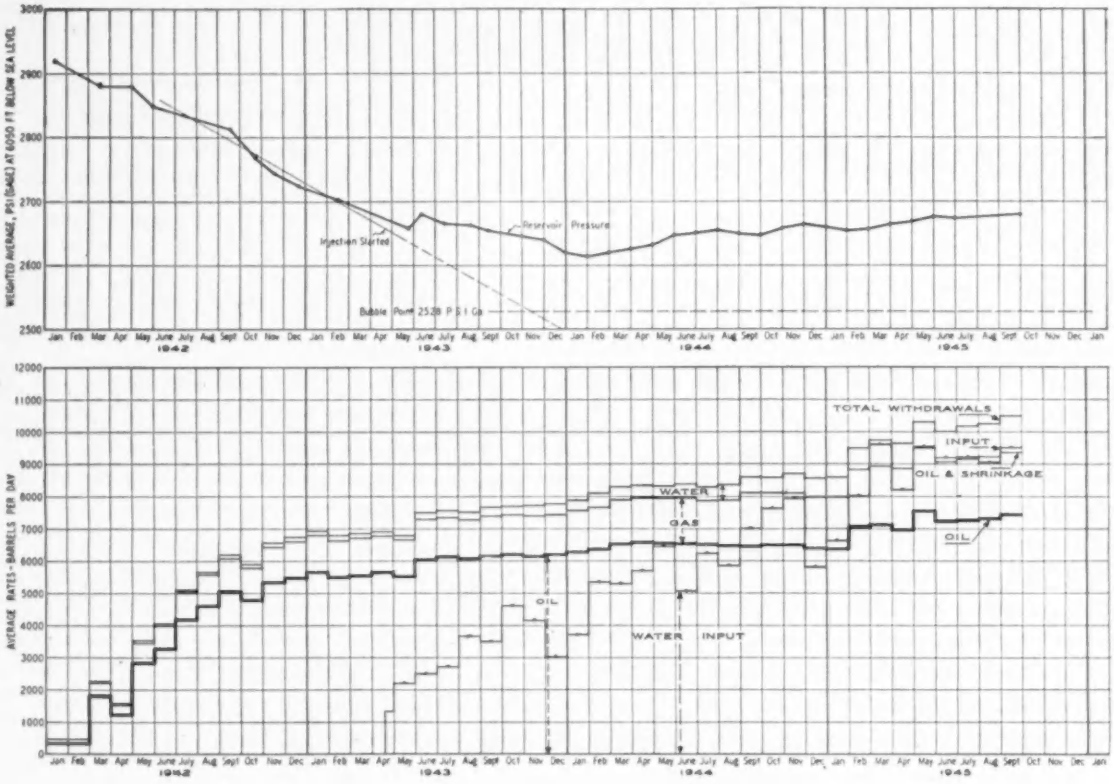

Figure 3. Production data, Midway field, Arkansas.

tion of requirements for artificial lifting of oil from producing wells. In addition to the benefits obtained from having higher pressures available to aid flowing, experience at Midway has disclosed that productivity indices of individual "clean" oil wells do not decline with time nor with accumulated production, provided the flowing bottom-hole pressures remain near or above the bubble-point pressure of the reservoir oil.

However, steady decline has been plotted from data on productivity-index measurements for some other wells in the pool which are required to operate with bottom-hole pressures considerably less than the bubble-point pressure (Figure 4). The behavior of productivity indices of these wells is interpreted as being in line with accepted principles and theories. The productive formation at Midway is a porous limestone largely soluble in hydrochloric acid. In order to maintain production rates, it has been possible to employ new acidizing techniques to raise to a maximum the productivity-index values for seven wells whose flowing life would have been shortened.

Injection Facilities

To expedite: an operating agreement for the project alone was drafted rather than unitization for the entire pool. Because only equities and responsibilities pertaining to the project were involved, the operators decided promptly. The agreement between the six operators in the field was made and entered into July 20, 1943. Approval was granted by the commission, which is empowered in such matters by a state law.[4] In the provisions of the agreement, the operator of the project "never shall be held to be liable for any results that may occur to the producing formation or any part thereof because of the operation of the system." Each party to the contract shares investment costs and expenses in proportion to the percentage of reserves computed to be recoverable from under each producing tract. However, to maintain pressure and dispose of salt water, production of oil from the individual leases and wells is carried on independently of the joint agreement.

In addition to an agreement between the operators, permission was obtained from the several hundred owners of mineral and royalty interests in oil and gas leases covering lands producing, and also containing, injection wells.

The contract listed the following principal items:

1. Distribution lines (steel pipe, cement-lined) $19,585.00.
2. Four input wells (converted from dry holes), $103,151.05.
3. Water supply and pressure plant (centrally located plant), $23,960.00.
4. Salt-water gathering lines (7.4 miles of cement-asbestos pipe line), $61,688.06.

The facilities described in the contract were installed. Due to the small capacity of fresh-water wells, it has been necessary to operate six individual wells which have an average capacity of less than 2000 barrels per day each. The fresh-water-supply wells are situated within the field, and are spaced over a distance of approximately three miles. All of the water produced from these wells, as well as the salt water gathered from several tank batteries, is kept out of contact with air. At a central point in the field the fresh-water and salt-water gathering lines are led separately to two low-form 500-barrel standard steel tanks.

Oil gathering on the surface of the water in the tanks is skimmed by overflow, and solids settling out during the two-hour retention period are periodically removed. A blanket of gas at a pressure of one ounce is maintained on the surface so as to exclude atmospheric oxygen. Two pumps driven by gas engines distribute the water from this central point to the four injection wells. Although several of the wells would require less pressure for injection, the pumps are regulated to dis-

TABLE 2
Injection-Well Data—Midway Field, Arkansas

COMPLETION	No. 1	No. 2	No. 3	No. 4	Total
Total depth (derrick floor), feet	6,765	6,778	6,720	6,742	.....
Total depth (below sea level), feet	6,490	6,491	6,451	6,477	.....
Casing sizes (in inches) at depth below sea level, feet	5½; 6,343	6; 6,343	6; 6,341	5½; 6,354	.....
Top of porosity (below sea level), feet	6,236	6,250	6,225	6,264	.....
Interval from assumed level of 6,225 feet below sea level to casing shoe, feet	118	118	116	129	.....
Formation exposed below casing shoe, feet	147	148	110	123	.....
Operation, Initial					
Date injection started	4–19–43	1–5–44	3–24–44	10–24–43	.....
Estimated reservoir pressure in nearest well	2,630	2,603	2,610	2,675	.....
Estimated reservoir pressure in input well	2,636	2,606	2,608	2,689	.....
Initial injectivity, barrels of water per day per pound per square inch pressure	3.6*–6.2	7.2	Over 50	7.4	.....
Operation, Current					
Injectivity after injection of 1,000,000 (plus) bbl.	5.8	6.8	55.0	7.2	.....
Injection rate (August, 1945), average barrels per day	2,345	2,195	2,240	2,253	9,033
Cumulative injection (September 1, 1945), bbl.	1,822,988	1,160,621	1,002,126	1,014,654	5,000,389

* Re-acidized.

charge at a pressure of approximately 450 psi in order to simplify manifolding. It is interesting to observe that this procedure raises power requirements to a water horse power of 68. In effect, only about 50 horse power is applied to the water injected after it leaves the central gathering tanks.

In general, a uniform procedure was followed for converting the four edge dry holes to injection wells. In each instance (Table 2) casing was set at a point at least 115 feet below the assumed oil-water contact, and approximately 130 feet of formation remained exposed below the casing shoe. After drilling mud had been replaced with water, the hole was enlarged 1/16-inch in radius with a rotary wall scraper, and backflow was induced. After a preliminary injection test, 15 percent acid was introduced in amounts which ranged up to 16,000 gallons per well—immediately followed by injection of water. The first well was initially treated with 7000 gallons. It was later acidized with an additional 10,000 gallons to increase its injectivity. This permitted the well to take water at pressures and rates comparable to wells No. 2 and 4. By September 1, 1945, a total volume in excess of 5 million barrels of water had been injected, more than 1 million barrels to each of the input wells; and the intake capacities of the wells have remained practically at the original levels.

The fresh water is of potable quality. The brine produced with the oil contains approximately 26 percent salts. Samples of each water, exposed to the air, develop turbidity within a few minutes. However, samples of the waters taken from injection lines remain clear indefinitely if collected under gas.

The use of water injection to raise and maintain pressures in oil and gas fields is notably beyond the experimental stage. Currently there are almost 20 pools in the Mid Continent and Gulf Coast[5] areas where expenditures have commenced for plans and projects of this type. Several of the principles demonstrated at Midway are applicable to all types of pools. Some conditions which now appear simple at Midway are known to be difficult and complex in several of the other pools whose projects are getting under way.

Oil Pools—The maintenance of pressure in thin-sand oil pools covering large areas should be found controlled to an important extent by the resistance of flow of oil through the formation across the pool. In such pools the transmission of pressure is necessary through the oil. In pools in which the resistance to flow is high, pressures on the flanks will have to be maintained considerably higher than the resultant pool pressure desired.

Gas and Condensate Pools—Favorable conditions for uniform distribution of pressure are found in the case of high-pressure permeable gas sand wherein the pool is underlain by or surrounded by water. Depending on the degree of uniformity and continuity of the formation beyond the edges of the pool, it may be expected, from theory, that the augmented water drive will be found almost as uniform in its encroachment pattern as an ideal natural water drive would be. In one Louisiana pool being considered, the operation would permit the operators to obtain income from the sale of the gas instead of being obliged to cycle to maintain pressure. At the same time pressure maintenance is possible at a lower cost. It is likewise believed that, inasmuch as the formation in the Louisiana pool is unusually uniform in permeability, greater recoveries can be obtained by induced water drive.

The principle of the technique has been described as a combination simultaneously of secondary and primary methods. An important difference between the methods is found in the amounts of water required ultimately for individual injection wells. Pressure-maintenance wells are scheduled for volumes up to 50 million barrels, and are required to retain their capacities to take water for 30 years or more. Typical water-injection wells in the Bradford Field receive 70,000 barrels over a seven-year period. Before the quotas have been all injected, the capacities to receive water are frequently found reduced to one-fourth of the original. Inasmuch as high and sustained capacities are required in pressure-maintenance projects, considerable attention to injection conditions is required. Among factors to be controlled are: well completion, control of swelling of clay minerals, and compatability of the waters to be mixed. Clear water is a requisite.

Although water drive is widely advocated, there are important instances[6] where gas-cap injection could prove more advantageous. Each pool requires study as early as possible. This would be facilitated first by drilling with wide spacing to define the pool boundaries, then by producing for a period at rates controlled to some extent by engineering requirements. This plan would provide suitable data for predicting results of various exploitation procedures. Thus, factual data will be made available early; and, if wide spacing is to be satisfactory under the procedure accepted, additional drilling can be avoided.

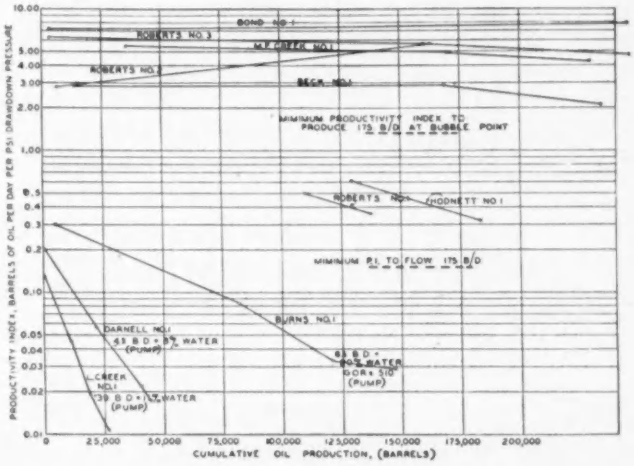
ROBERTS NO. 3
ROBERTS NO. 2
BEGA NO. 1
MINIMUM PRODUCTIVITY INDEX TO PRODUCE 175 B/D AT BUBBLE POINT
ROBERTS NO. 4
HODNETT NO. 1
MINIMUM P.I. TO FLOW 175 B/D
BURNS NO. 1
DARNELL NO. 1
63 B/D + 2% WATER (PUMP)
63 B/D + 90% WATER GOR + 510 (PUMP)
CREER NO. 1
39 B/D + 1% WATER (PUMP)
PRODUCTIVITY INDEX, BARRELS OF OIL PER DAY PER PSI DRAWDOWN PRESSURE
CUMULATIVE OIL PRODUCTION, (BARRELS)

Figure 5. Production and drawdown data, Midway field, Arkansas.

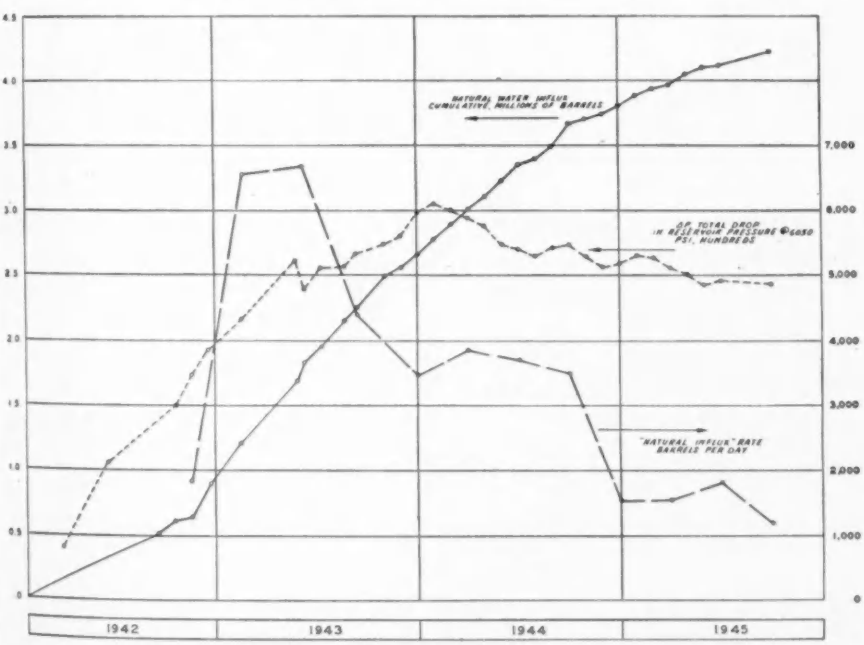
NATURAL WATER INFLUX, CUMULATIVE, MILLIONS OF BARRELS
% OF TOTAL DROP IN RESERVOIR PRESSURE @ 6,650 PSI, HUNDREDS
"NATURAL INFLUX" RATE BARRELS PER DAY
1942
1943
1944
1945

Figure 4. Water-injection and pressure data, Midway field, Arkansas.

Acknowledgment

The effective assistance of the Arkansas Oil and Gas Commission is gratefully acknowledged. Invaluable operating aid was rendered at Midway by employes of the Barnsdall Oil Company—especially H. D. Jones; R. B. Chesney; L. C. Carner, and V. B. Harris, petroleum engineer and foreman for the joint project.

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[4] *Arkansas Oil and Gas Commission Order No. 2-39, Rule C-8*, pursuant to Act No. 105 of the 52nd General Assembly of the State of Arkansas.

[5] M. L. Euwer, "Salt-Water Injection for Pressure Maintenance," *Oil Gas J.* **44 [21]** (1945).

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Venezuela Deep Well Offers Valuable Data

Mud tanks at VOC's R-801, showing corners of mud cooling pits and part of circulation system

Cabinas field project serves as training ground in modern deep drilling methods

By GEORGE O. IVES, Staff Writer

A DOUBLE purpose was accomplished by the Venezuelan Oil Concessions, Ltd., in drilling its R-801 deep test in the Cabimas field, Lake Maracaibo area.

It obtained valuable stratigraphic information in drilling to 13,034 feet, in an area where production normally is found at depths not greater than 3600 feet. It also served as a training and proving project for many crewmen and apprentices receiving their first experience in modern deep-well drilling methods and practices with modern deep-well equipment. In addition the project resulted in establishment of a new depth record for Venezuela and South America, and its progress was halted only because in the opinion of the operators the well had been taken as deep as it was safe to go with the grade "D" 4½-inch drill pipe, the best available at the time. Drilling has been halted at this depth, but only until such time as more suitable equipment is available.

General view of drilling machinery

Site of Well

The site of the well is in the center of the V.O.C.'s Cabimas field, on the eastern shore of Lake Maracaibo. This is the first of the prolific chain of fields in the Lake Basin, which, having been in production since 1924, has reached the stage where depletion is rather advanced, and where the only locations remaining to be drilled in an effort to sustain production are those intermediate sites which might be expected to yield only stripper production. Decision to drill this deep well came at a time when the Cretaceous possibilities shown by wells in the La Paz area to the northwest, across the lake, and in other areas near the Venezuela-Colombian border, might well be looked into on the eastern shore. No well in the area has reached the Basement rock and the Shell Group's V.O.C. company plans to do so with this well if possible. Discovery of Cretaceous or other deeper pays here would add tremendously to the value of a field which has already produced more than 220,550,000 barrels of oil, and is still producing at the rate of 19,000 barrels daily.

Previous Record Holder

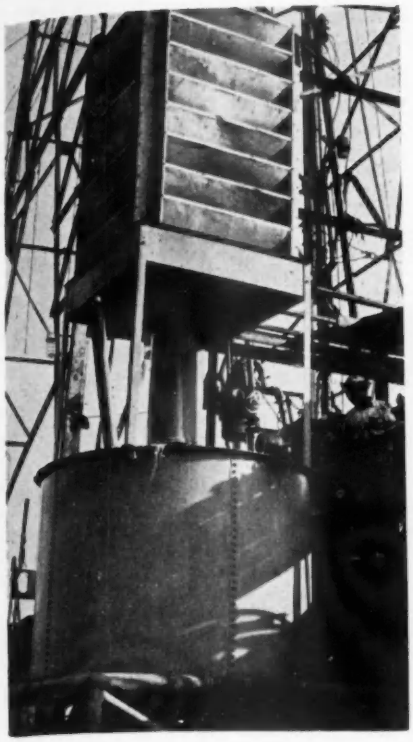
Previously the deepest well to be drilled in Venezuela was Socony-Vacuum Oil Company's Anaco 1, in Eastern Venezuela, drilled as an outpost northeast of production in the El Roble field in the State of Anzoategui, which reached 11,294 feet in tre Eocene formation and was completed in March, 1942, as a gas-distillate producer at 10,970 feet. It has since been worked over and is now off production.

Venezuelan Oil Concessions Ltd.'s R-801 was spudded February 10, 1944, projected to at least 12,000 feet for exploration of the entire Eocene section. A heavy-duty steam rig ordered from the United States, but under wartime conditions the date at which this may have been available was unpredictable, and operators decided to start drilling with a medium duty rig while awaiting the heavy outfit. Using this comparatively light equipment, the well was drilled to 9451 feet before the operators deemed it advisable to halt operations to change to the new rig.

Special Mud

Surface casing was set at 1701 feet, using 13⅜-inch seamless casing, nine joints being 68-pound and 48 joints of 48-pound pipe. A string of 9⅝-inch production casing was set at 7997 feet, 255 joints of 40 and 43.5-pound N-80 casing, and the remainder of the hole was drilled without setting any other casing. The drilling mud used for drilling most of the hole is said to be a special oil-emulsion mud developed by the Shell Group's research in Venezuela.

No drilling troubles were experienced, and the first 9451 feet of hole was



Cooling tower and tank for hydromatic brake

drilled in 239 days, an average of 39½ feet a day.

The new rig which drilled the lower 3583 feet of hole in 130 days is one of several recently acquired by the company for deep-well drilling, and being of the most modern type available at the present time, the company used it on this well as an opportunity for training many of its Venezuelan employes. With the single exception of the American toolpusher, the crewmen were Venezuelan. The supervisor, Jesus Brito, started working for Venezuelan Oil Concessions years ago as a laborer. In addition to the regular crew, the company assigned 20 apprentices to duty with the various tours to gain experience in deep well drilling. These were young nationals who had either just joined the drilling department, or who had been in the company's school maintained for employes. They underwent training as drillers on this well.

Shale Shaker Installed

Rigging up the new equipment started March 3, 1945, and the first hole was drilled on March 7, with drilling operations stopped on July 15, 1945, when it was considered inadvisable to go deeper with the 4½-inch drill stem.

Derrick used for the deep drilling was a 136-footer with a 30-foot base, 952,000 pounds capacity, on a ten-foot substructure.

Draw works are of the latest design, fully enclosed type, with 28-inch by 40-inch drum, 10-inch shaft, and 54-inch water-cooled brakes, and equipped with double-rotor 40-inch hydromatic brakes.

Drilling Engine

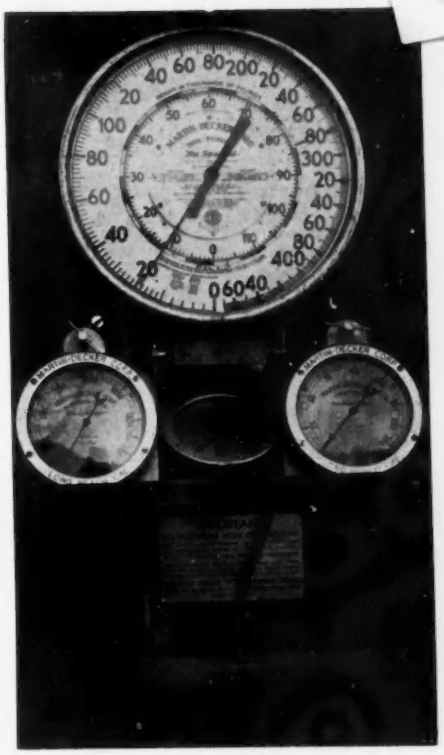
The 12x12 vertical drilling engine is connected by oil-bathed system to the draw works, which is equipped with an automatic spinning cathead. Rotary table is direct-connected to a 10x8-inch vertical rotary engine of latest design.

The 300-ton capacity crown block, and 300-ton traveling block with 48-inch sheaves were strung with 1¼-inch wire lines, and a 200-ton swivel and 200-ton hook were used in the lower part of the hole.

A battery of six 100-horsepower 250-pound boilers was installed as a safety factor, since the drilling water was the brackish water from Lake Maracaibo. Besides being extremely corrosive, it deposits much scale.

Since regulation of drilling mud was to be a factor in drilling this well, a shale shaker of the rotary type was installed, and mud tanks were installed to prevent contamination and to better regulate weights.

Two 18x8x20 slush pumps took care of the mud circulation efficiently, and two additional smaller pumps were used for main mud mixing and circulating through cooling pits. A special tank and cooling tower was installed in conjunction with the hydromatic brake.



Drilling control instruments

Drilling a well of this nature, with crews not heretofore trained in deep-well drilling is considered something of an achievement by men of the Shell interests, and even more so since the well was drilled without any difficulties normally attendant upon such operations. As it now stands, the well is only temporarily abandoned, although rig has been moved off pending arrival of heavier drill pipe, and is expected to be carried even deeper in carrying out the original objectives.

Venezuela's deepest well—a valuable training project.

Drillers Apprentices J. A. Brito, Jose B. Molina, and Marcos Pierre, trainees on the deep well

Patent Roundup

A New Feature of THE OIL WEEKLY

In this column will be reviewed patents dealing with drilling, producing and pipe line branches of the oil industry as they are issued by the United States Patent Office.

SEVERAL patents, based on new discoveries in oil field equipment, have been issued by the United States Patent Office at Richmond, Virginia.

Seismic Surveying

Conrad Reichert, of San Antonio, Texas, has assigned his patent for a method of seismic surveying to Olive S. Petty also of San Antonio.

Reichert's patent calls for an explosive charge and blasting cap to be placed in a deep shot hole. The upper end of the hole is plugged, leaving the major portion above the charge unobstructed.

The cap is fired, but ejection of the exploded material is delayed long enough to permit recording of "significant seismic impulses," the patent explains.

* * *

Sulphur Production

A process for producing sulphur from hydrogen sulphide has been assigned Standard Oil Development Company of Delaware by C. K. Jones, a minor, of Mountainside, New Jersey.

The formula calls for a mass of powdered catalyst to be maintained in dense suspension in a reaction zone. At the same time, a mixture of "about" equal molecular proportions of SO_2 and H_2S is forced continuously into the zone at what the patent describes as "elevated temperatures."

The "superficial velocity of the gaseous mixture," the patent says, is regulated in the zone to keep the catalyst turbulent. Meantime, the reactant is allowed to remain in the zone long enough to cause the conversion of hydrogen sulphide to sulphur by interaction with SO_2. The product then is removed and the sulphur is allowed to cool and liquefy.

* * *

Metal Cutting Lubricant

A metal cutting lubricant has been developed and patented by Gerald E. Phillips of Cranford, New Jersey. This process also has been assigned to Standard Oil Development Company.

The composition essentially is a mixture of isopropyl alcohol and an amine, the patent says. The formula calls for mixture to be taken from alkyl amines, hydrolated amines and aromatic amines in a ratio of about 1 to 7.5 parts by weight of amine to 3 parts by weight of isopropyl alcohol.

* * *

Well Flow Device

Robert O. Watson of Dallas has assigned to Merla Tool Corporation, also of Dallas, a patent for a well-flow device.

The unit, adapted to fit in a well tubing, has a chamber with a passage through which oil is permitted to flow from the outside to the inside of the tubing. A main valve on the device serves to control the flow of oil.

Pressure of the oil outside the tubing keeps the valve closed, while a "pilot valve," designed to react when the pressure reaches a certain point, serves to unlock the main valve and permit the normal flow of oil.

* * *

Pipe and Strainer

Morris Muskat of Oakmont, Pennsylvania, has assigned to Gulf Research & Development Company a process for recovering oil.

A fluid pipe is passed into the well through gas formations into a lower oil stratum and is connected with a porous and narrow choke. The strainer, enclosing the end of the pipe, also extends up and over the face of the oil stratum and can be withdrawn to the gas oil formation.

* * *

Well-Logging Device

A method and the equipment for logging a well by radioactivity has been assigned to Geophysical Development Corporation of Washington, D. C., by Shelley Krasnow of New York City and Leon F. Curtiss of Montgomery County, Maryland.

Essentially, the design is a narrow lateral holder adapted to fit in the drill hole.

An ionization chamber, with the means of admitting gas and trapping it, is mounted on the holder. As the trapped gas is charged, a current is set up which measures the intensity of radioactivity in the area, the patent states.

A magnetically operated switch is mounted near the chamber and adapted to record a series of impulses. Each impulse is determined by the rate of dissipation of the charge in the chamber.

As the impulses are recorded, they are transmited on a chart which measures the position of the holder in the drill hole and establishes a record of the radioactivity within the bore hole.

* * *

Treating Wells

A patent for the treatment of oil wells, assigned to the University of Kansas Research Foundation, was developed by Eugene A. Stephenson of Lawrence, Kansas. The method applies to wells that contain oil overlying water and a water cone in the formation around the well bore.

The well first is plugged long enough for the liquid to become "static," the patent explains. It then is pumped from the bottom while oil is being poured on the top of the column at a weight proportioned to equal the weight of the liquid being pumped from the bottom.

The hydrostatic pressure in the oil-bearing formation, meanwhile, is kept constant.

A steady supply of oil is pumped until all water has been removed. Then enough pressure is applied at the top of the column to force the oil into the formation, depress the water cone and form an emulsion of oil and water.

A method, designed to disintegrate calcium sulphate deposits in oil wells, has been patented by Erskine E. Harton, Jr., of Evanston and by Priscilla Lyon of Chicago. It is assigned to The Pure Oil Company.

The patent says simply that a concentrated solution of aqueous potassium hydroxide—at least 20 percent by weight of potassium hydroxide—is placed at the bottom of the well, causing the acid to dissolve.

* * *

Well Logging

Claude R. Hocott of Houston has assigned to Standard Oil Development Company a new method of logging wells.

A series of formation samples are taken from the well at successive depths. A measured amount of each sample is placed in a "half cell, the potentials of which" are sensitive to the addition of a small amount of a reducing component.

Samples are compared before and after their treatment and then can be correlated with sample depths.

* * *

Treating Mud

Truman B. Wayne of Houston has patented a method of treating mud in an oil well with an agent containing the metaphosphate radical. The patent is unassigned.

* * *

Control Head

An improved casing control head for wells, patented by Edmund J. Roach and Edward F. Cooke, Jr., of Beaumont, has a slip bowl with an outside seat that seals and supports the bowl within the head.

A bore through the bowl allows for the passage of a pipe. The middle of the bore is expanded to form a slip chamber bounded at the top and bottom by a slip that extends inwards and has supporting flanges.

The side wall of the slip chamber converges to form a slip seat, while within the slip chamber are a number of other slips in a circle.

A means above the outside seat of the chamber provides for the release of the slips from the top flange, permitting the inner pipe to move up and down.

Patent is unassigned.

* * *

Cementing

A means of cementing wells has been patented by Charles A. Brokaw of Houston. Patent is unassigned.

A tubular conductor, adapted to fit in a well bore, has an outlet in the lower half over which a sleeve is fitted. The opening also is designed to allow "communication" between the conductor and the well bore when the sleeve moves up and down.

Mounted atop the conductor is a sliding collar and surrounding it is a ring-shaped, flexible unit. The upper end of the ring unit is attached to the collar while the lower end is open. The ring is designed to push toward the walls of the well bore, the patent adds.

The sleeve, which extends from the lower part of the conductor, is designed to catch and hold the lower end of the separating ring in such a way that cement can be poured into the well bore below the ring.

MISSION *Slush Pump* VALVES

A small replaceable bushing takes the wear instead of the more expensive valve seat—greatly increasing valve seat life. This means lower replacement costs and less time spent changing valve seats. Since the seat stays in the pump longer without removal, danger of washouts between seat and deck is reduced.

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Behavior of Water-Input Wells

Part 1

By PARKE A. DICKEY,
Quaker State Oil Refining Corporation, Bradford, Pennsylvania, and
KURT H. ANDRESEN,
South Penn Oil Company, Bradford, Pennsylvania

The authors give a description of some phenomena of well behavior in this first of a series

ALTHOUGH the basic formulas describing the radial flow of fluids in porous media have been in general use in oil-field engineering for several years, there are many features of actual well behavior that have never been discussed or described in published material. This paper is an attempt to describe certain of these phenomena which are important in connection with the injection of water into underground reservoirs. An attempt is made to relate the observations to the generally accepted theory. However, the explanations are considered tentative, and many more similar studies will have to be made before completely satisfactory explanations of input-well behavior are possible. This paper is in no sense a treatise on water-injection wells, but rather raises numerous problems on which further work is required.

Water is injected into underground reservoirs to supply artificially developed energy to partly depleted reservoir rocks and thus increase the rate of oil production or, in some fields, merely as a means of disposing of an annoying byproduct. It is becoming more generally recognized that both purposes may be combined in one operation. The water is injected into the reservoirs through wells; and the efficiency of the whole process depends, in large measure, on their intake capacities. It is, therefore, worthwhile to study the behavior of injections wells, to inquire why wells in the same area often have different water-intake capacities, and to learn the reason why intake capacities vary with time in any one well.

When water first is introduced into an underground reservoir through a well, the rate at which the well takes water is a maximum. The intake capacity decreases rapidly during the first few weeks, and then continues to decline more slowly, until finally almost constant quantities of water can be injected into the reservoir per unit time for long periods.

The initial water-intake rate of a well depends on: (1) effective permeability of the sand; (2) viscosity of the water; (3) thickness of the sand; (4) effective radius of the well; (5) pressure within the reservoir; and (6) applied water pressure. As more and more water is injected into a reservoir, other dependent factors come into the picture. The water fills the pores of the sand near the well; and, as this liquid-saturated region extends, the same pressure applied at the well head forces less and less water into the reservoir. This decline in input rate is caused by the increasing resistance to flow as more and more water enters the reservoir. This so-called fillup factor "7a" will be called the effect of r_e, the pressured, or external radius. As suspended solids or gelatinous materials in the water reduce the effective permeability of the sand at the walls of the well, another factor,[8] the plugging by foreign matter in the water, is important in reducing the intake rate.

Certain of these factors can be varied at will, whereas others cannot. It is important, therefore, to evaluate each of them as far as possible if the behavior of injection wells is to be understood. During drilling it is possible to increase the effective well radius by using a larger bit, or by shooting or acidizing the well. After the well has been completed, it is no longer possible to change the radius.

The effective permeability of the sand can be decreased by plugging, either accidentally by injecting dirty water, or deliberately, if it is desired to decrease the intake capacity of certain strata ("controlled or selective plugging"). The applied water pressure can be raised at will, but must not exceed the safe limit above which rupture of the formation takes place. As a rule, the viscosity of the water, thickness of the sand, pressure within the reservoir, and the effect of the fillup cannot be controlled.

In designing water-injection projects, the controllable factors such as the effective well radius and applied pressures should be fixed at their maximum, or maximum efficient values. After the well has been put in operation, the decline in water-intake rate to a greater or less extent defeats the purpose of the well. The causes of the decline should, therefore, be determined and the controllable causes distinguished from those that cannot be controlled. Factual and observational data that make it possible to distinguished and evaluate these factors are very scarce, nor have standard techniques for their determina-

Prepared as a study sponsored jointly by the American Petroleum Institute Topical Committee on Production Technology and the Institute's Subcommittee on Secondary-Recovery Methods.

Presented before the American Petroleum Institute Division of Production at the Twenty-Fifth Annual Meeting, Chicago, Illinois, November 15, 1945.

To be published by The OIL WEEKLY in four installments, this being the first.

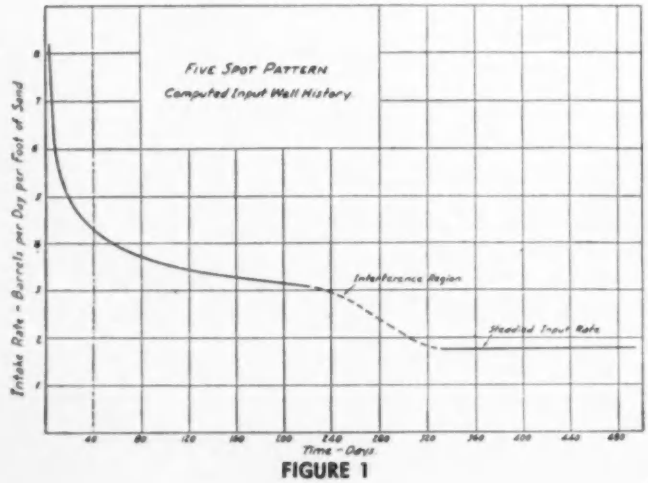
Five Spot Pattern
Computed Input Well History
Interference Region
Steadied Input Rate
Intake Rate - Barrels per Day per Foot of Sand
Time - Days

FIGURE 1

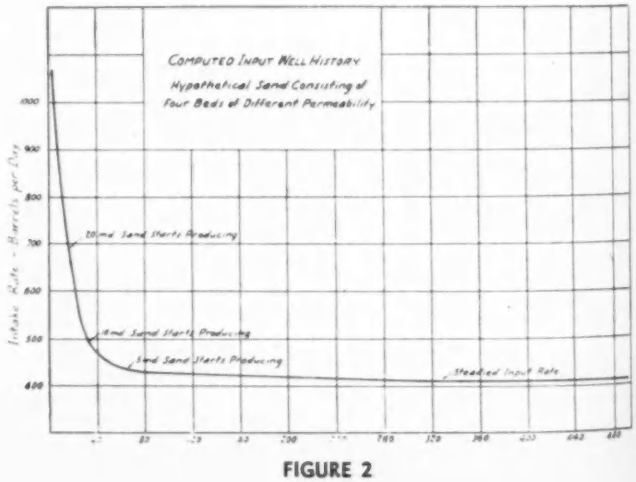
Computed Input Well History
Hypothetical Sand Consisting of
Four Beds of Different Permeability
Steadied Input Rate

FIGURE 2

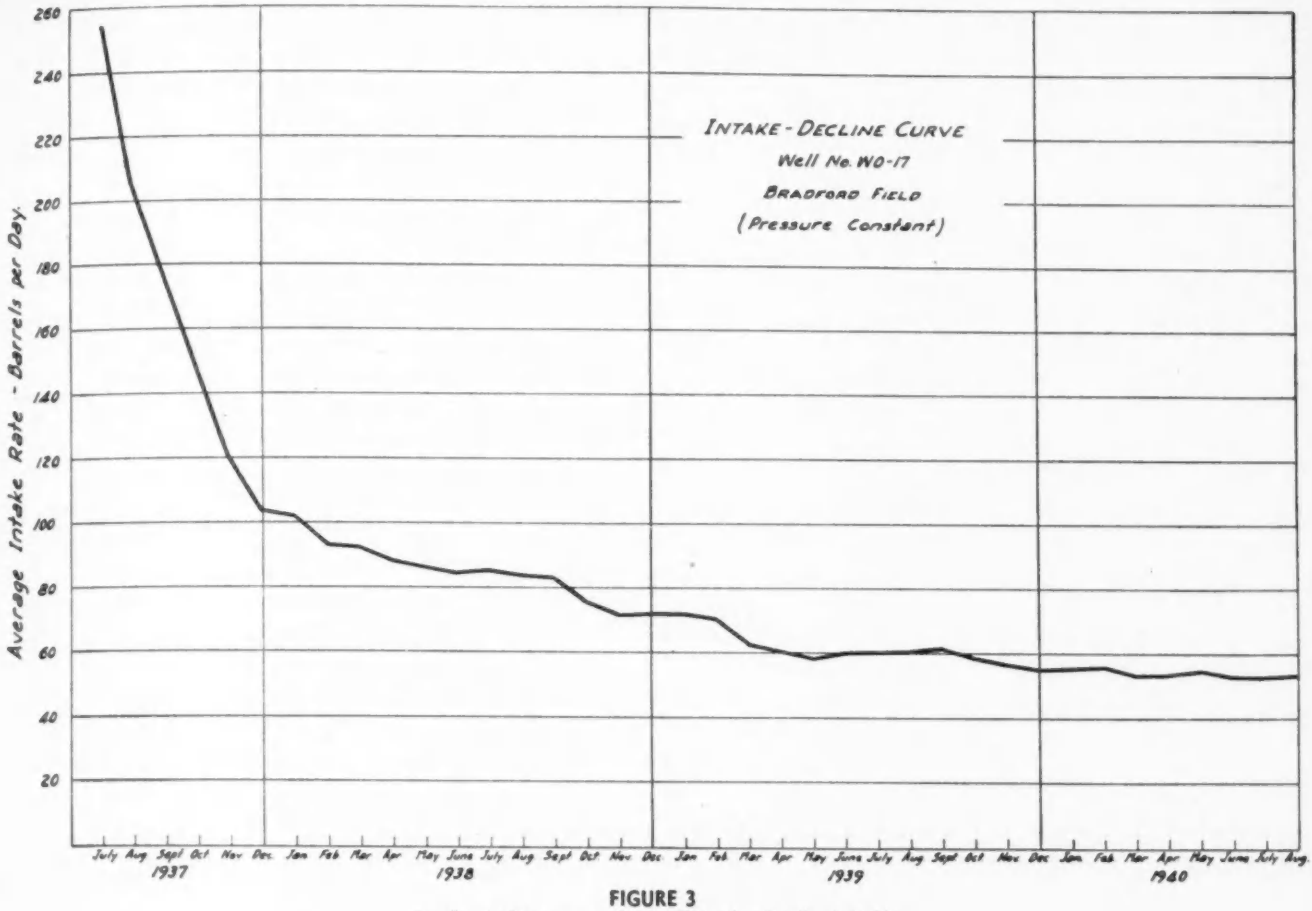

FIGURE 3
Intake-decline curve of a well in the Bradford field

tion been developed. Accordingly, this paper attempts to review the facts that are known, and to suggest new methods of determining certain of the factors.

Theory of Water Injection

General Equation: Muskat[1] has shown that the relation between the production (or intake) rate of a single well and the characteristics of the fluids, sand, well, reservoir, and pressures can be expressed mathematically by the following equation:

$$Q = \frac{2\pi k h (p_e - p_w)}{\mu \log_e \frac{r_e}{r_w}} \quad \ldots\ldots (1)$$

Where:

Q = rate of production (or intake), milliliters per second.
k = effective permeability, darcys.
p_e = pressure in reservoir, atmospheres.
p_w = pressure at sand face of well, atmosphers.
h = sand thickness, centimeters.
μ = viscosity of liquid, centipoises.
$\log_e$ = natural logarithm, base e.
r_e = distance from well to point where pressure is p_e, centimeters.
r_w = effective radius of well, centimeters.

The derivation of this equation is based on the fact that the flow of an incompressible fluid through any circle concentric with the well must be constant, and is based upon Darcy's law, which is the law governing the flow of fluids through a porous medium. The equation, therefore, will apply either to a well producing liquids or to one receiving them. It can be applied to the actual field operation of a water-input well with fewer qualifications and uncertainties than to a producing oil well. An intake well receives only water, whereas an oil well may produce a non-homogeneous mixture of oil, water and gas— which causes variations in the values of some of the factors in the formula. The distance r_e is a rather uncertain dimension in the case of a producing well; but, in the case of an injection well, the average distance to which the pressure has extended outward from the well can be calculated from the porosity of the sand, its fluid content, and the cumulative volume of water injected. As r_e appears as the logarithm in the equation, it is a fairly insensitive function above its low values.

There are numerous uncertainties which make quantitative applications of the flow formula difficult; they do not, however, impair its usefulness in explaining the relative importance of each of the included factors.

Effective Permeability: The factor k in the general equation is not the permeability of the extracted and dried sand to air as it is usually measured, but the effective permeability of the sand to water, which is always less (and often much less) than the dry permeability. It varies principally with the water saturation of the sand. In an oil sand the oil saturation seldom becomes less than 15 to 25 percent. The gas saturation may also remain quite appreciable because of trapped bubbles, and may amount to 5 to 10 percent or more. In the immediate vicinity of the well, however, the gas saturation will decrease to a low value as water is injected because of the gradual solution of the gas in the water and the compression of the free gas to a small volume. Due to residual oil and gas the water saturation in a flooded-out sand can seldom exceed 85 percent, and may be as low as 70 percent. According to laboratory work[2] on clean sands, the permeability to water ranges from 30 to 60 percent of the dry permeability as the water saturation varies from 70 to 85 percent. Tests on virgin and artificially oil-saturated cores show that the effective permeability of a sand to water is often less than one-tenth of the dry permeability. A determination of the effective permeability of the unextracted sample to water would be a far more useful test to runs on cores of injection wells than the usual permeability tests.

The effective permeability of the sand adjacent to the well can be, and probably often is, materially decreased by mudding oft during drilling and cleaning out.

The permeability of the sand to oil affects the intake rate when oil is being banked and driven ahead of the water. Its effect is not large when the "bank" is a considerable distance from the well. When the values are known, the equation may be considered a two-fluid system.[3] When the sand is altogether watered-out, the intake rate should increase slightly because of the removal of oil from the system.

Viscosity: The viscosity of the injected water can easily be measured; and, except in the case of strong salt water or in high-temperature formations, is usually not far from one (1) centipoise. When oil is being moved in the sand, the equation for the two-fluid system may be used but, in general, the correction for the viscosity of the oil is not large.

Sand Thickness: The effective sand thickness is a characteristic of the geology, which cannot be changed. The thickness of the sand body can be determined by coring the wells; and, when combined with permeability determinations, a weighted

average permeability of the total net sand can be calculated. In other words, the effective permeability, k, times the net thickness of sand, h, may be considered the "foot-millidarcy capacity" of the sand.

Pressure: The pressure p_w at the face of the sand can be determined from the well-head pressure and the depth of the well and the density of the water. In general, it is equal to the well-head pressure plus 0.434 times the depth of the well. The reservoir pressure p_e can usually be determined from the height of the column of formation liquid in the well before the water is turned in and from its density. The reservoir pressure is sometimes surprisingly high in many oil sands that are virtually depleted of their recoverable oil by ordinary producing methods.

Well Radius: The effective radius of the well is very difficult to determine in the case of a well that has been shot. Comparison of intake rates of shot and unshot wells in the Bradford Field[4] indicates that the cracks resulting from the shot have the same effect as increasing the well radius to several feet, although the material removed from the well shows that the actual radius has been increased only slightly. A heavy shot will increase the intake rate four or more times.

Pressured Radius: The pressured radius r_e can be estimated, at least roughly, from the amount of water injected and the available pore space. The latter will be the total pore volume less that occupied by interstitial water and oil.

Filling of the Reservoir

The fundamental equation for the rate of water injection has been given as equation (1). As more and more water is injected, the "pressured radius" r_e in the equation increases and, therefore, Q, the injection rate, must decrease with time.

The pressured radius, r_e, depends on the cumulative volume of water injected, and the space available, as follows:

$$V = \pi f h r_e^2 \quad \ldots\ldots(2)$$

Where:

V=cumulative water injected, milliliters.
f=fractional part of the rock available for the water.

In general, f will be the porosity of the rock, multiplied by the gas saturation. The oil may or may not be moved by the advancing water. If no oil is moved, the water fills the gas space. If oil is moved ahead of the water bank, the volume of injected water to fill the reservoir with liquids (oil and water) to a given distance r_e will still be the volume originally filled with gas.

If a large percentage of oil is being removed, equation (1) is not strictly true, and the more exact expression is:

$$Q = \frac{2\pi h (p_w - p_e)}{\frac{\mu_w}{k_w}\log_e\frac{R_w}{r_w} + \frac{\mu_o}{k_o}\log_e\frac{r_e}{R_w}} \quad \ldots\ldots 3$$

Where:

μ_w = viscosity of the water, centipoises.
μ_o = viscosity of the oil, centipoises.
k_w = effective permeability of the sand to water, darcys.
k_o = effective permeability of the sand to oil, darcys.
R_w = radius of encroached water, centimeters.

The other symbols are as defined under equation (1).

As a rule, the width of the oil bank is small in comparison to the radius of the encroached water, so that no very large error will be introduced by considering the simpler case.

From equation (1) and (2) the change in cumulative volume of water injected with time can be calculated. It is given by:

$$\frac{V}{\pi h f}\left(\log_e\frac{V}{\pi h f r_w^2} - 1\right) + r_w^2 = \frac{4 k \Delta p t}{\mu f} \quad \ldots\ldots(4)$$

The change in intake rate with time is given by:

$$\frac{4 k \Delta p t}{\mu f r_w^2} = 1 + \left(\frac{4\pi k h \Delta p}{\mu Q} - 1\right) e^{\frac{4\pi k h \Delta p}{\mu Q}} \quad \ldots\ldots(5)$$

Where:

$\Delta p = p_w - p_e$.

In customary oil-field units, this is:

$$\frac{0.0253 k \Delta p t}{\mu f r_w^2} = 1 + \left(\frac{0.0.142 k h \Delta p}{\mu Q} - 1\right) 10^{\frac{0.00617 k h \Delta p}{\mu Q}} \quad \ldots\ldots(6)$$

In the equation (6) V is in barrels, h and r_w are in feet, p is in pounds per square inch, k is in millidarcys, and t is in days. It should be emphasized that the permeability k is the effective permeability of the natural sand to water. This is a small fraction of the permeability of the extracted and dried sample to air.

The change in intake rate with time, as given in the foregoing formulas, is plotted in Figure 1 for a 5-spot pattern of 300-foot spacing between water-input wells. The following quantities are assumed:

k = 1 millidarcy effective permeability to water.
Δp = 1,000 psi difference between sand face and reservoir pressure.
μ = 1 centipoise viscosity.
f = 0.07 of bulk volume space for the water to fill in order to reach 100 percent liquid saturation.
r_w = 15-ft. effective radius. (This is not the actual radius, but the estimated effective radius produced by the cracking effect of the shot.)
h = 1-ft. sand thickness.

Inasmuch as equations (4) and (5) are for a single well (radial flow), they are no longer valid when the encroaching liquid bank meets the banks from neighboring wells. When this occurs, interference takes place; and, as in the advancing liquid is forced to converge toward the producing wells, the intake rate is reduced—finally becoming stabilized at the steady conductivity of the pattern. For the 5-spot this is given as:

$$Q = \frac{\pi k h \Delta p}{\mu\left(\log_e\frac{D}{r_w} - 0.6190\right)} \quad \ldots\ldots(7)$$

■ CONTINUED ON PAGE 44

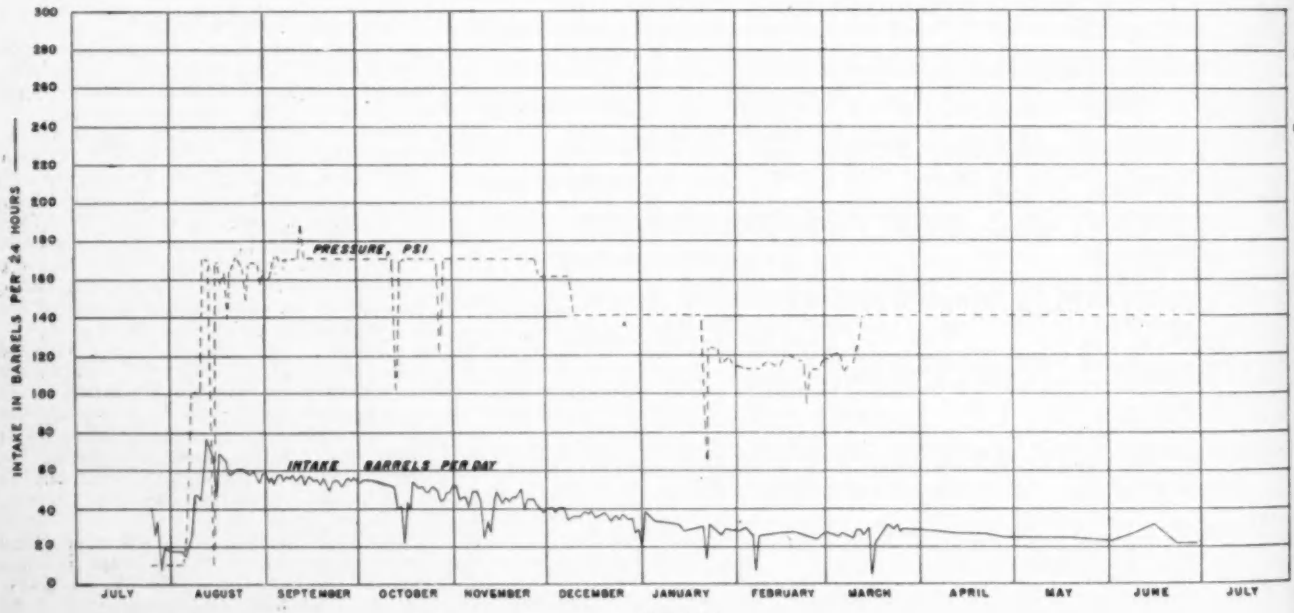

FIGURE 4
Input an pressure history of wel 054 (Clintonville, Pennsylvania)

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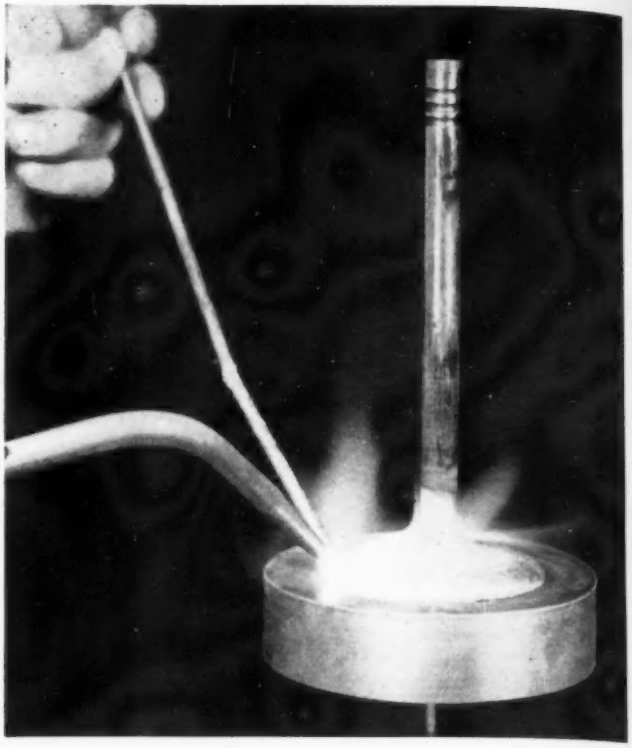


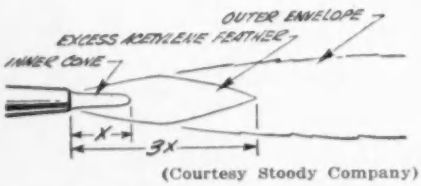
(Courtesy Stoody Company)

Figure 2—Valve in place and being slowly rotated by motor-driven disk while torch and welding rod apply hard-facing metal to build up area removed during lathe operation which trued up face and provided recess to take added material. The disk affords a plane surface against which the metal being added may form, enabling feather-edged valves to be reclaimed when otherwise they would be discarded.

THE conventional method of adding hard metal on the wearing surface of exhaust valves for internal combustion engines is open to the objection that, unless the operator is especially skillful or careful, the heat applied is not uniform, and as a result the valve disk warps or is distorted so that excessive grinding is necessary to true the new face. Likewise, if a valve is warped, it frequently has stresses set up within its metal which will seek relief when the valve is heated in service, causing the seating surface to pull away from its form as ground, and starting leakage which quickly results in burned or stuck valves.

There has been developed a method whereby the valve disk, instead of being rotated without support at the end of the stem, is carried on a miniature face place which serves the dual purpose of supporting the work and maintaining the temperature of the valve head below values at which undue expansion would occur. The usual spindle from which the valve stem would be suspended is reversed to take a specially machined disk, on which the valve is placed, and by which it is revolved as the hard-facing metal is applied. (See "Power Unit Life Extended by Reconditioning Valves," THE OIL WEEKLY, August 28, 1944.)

The disk is shown in cross-section in Figure 1, a one-inch copper disk, 4 inches in diameter, the upper surface being hollowed out to form a recess. The recess is slightly less in diameter than that of the valve to be reconditioned—in the sketch a three-inch recess being shown—the aim being to form clearance in which the head of the valve may project without affecting the supporting of the rim of the valve on the smooth surface of the disk.



(Courtesy Stoody Company)

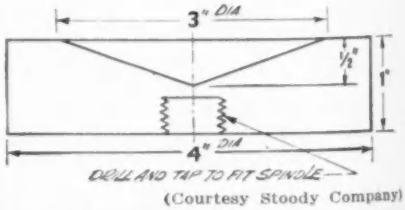
Figure 1—Cross-section of typical copper disk for supporting, rotating and cooling edge of internal-combustion engine valve while the worn face is being rebuilt with hard-facing metal. The diameter of the conical recess in the upper surface of the supporting disk should be made to allow a contact area between valve edge and disk sufficient to insure good heat conductance.

Warpage of edge area is minimized by new method, which calls for less skill and care in in application

Machining the Valve

The valve to be hard-faced is machined in the usual manner, by removing all scale and turning a rounded recess in the face where the new metal is to be applied. If the top of the valve is roughened in service a very light clean-up cut is taken inward from the edge to a distance which will insure clearance when matched with the recess in the copper disk. Such a cut, if made, should always be feathered off to prevent forming an edge which might overheat and maintain an incandescent area to cause preignition.

When the valve is machined satisfactorily, it is inverted over the copper disk on the rotating device, with the head resting over the clearance space in the disk, and with the outer edge firmly and evenly supported all the way around its circumference. The valve is then rotated in the usual manner, at a



(Courtesy Stoody Company)

Figure 3—Sketch of properly proportioned flame for applying hard-facing metal, with the acetylene feather approximately three times the length of the inner cone. This type of flame minimizes agitation of the pool of molten metal.

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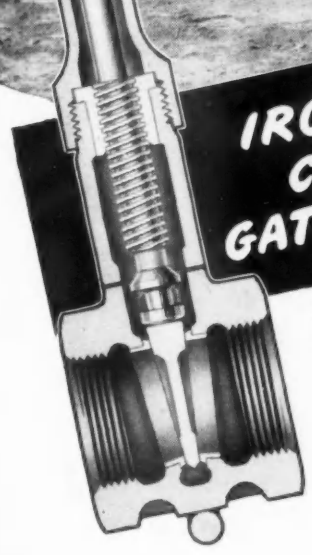
Manifold on Central Tank Battery



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Size		Saturated Steam	Cold Water, Oil or gas, non-shock
Screwed	¼ to 2-inch 2½ to 4-inch	150 pounds 125 pounds	225 pounds 175 pounds
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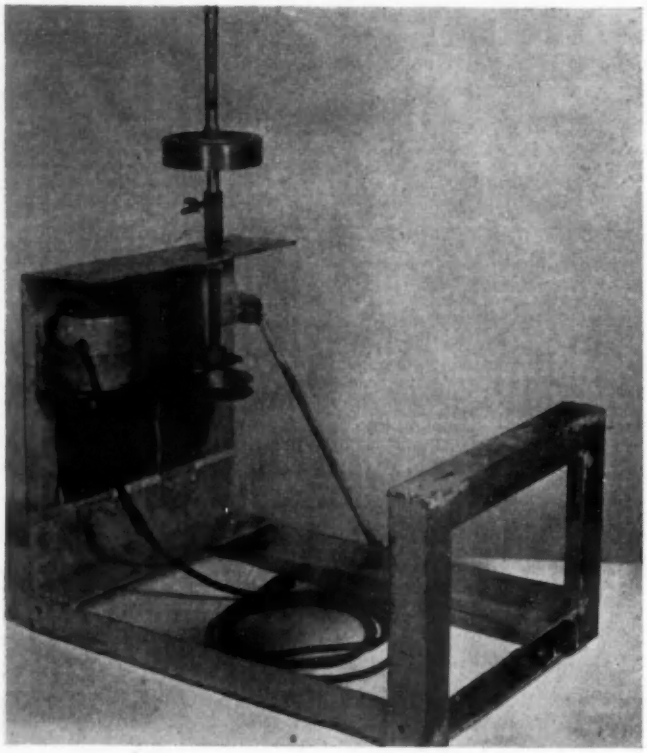

(Courtesy Stoody Company)

Figure 4—To use the heat-conducting disk, the conventional valve-rotating machine is turned over so that the spindle projects upward instead of downward, the disk being carried on a stub shaft which is inserted into the recess and clamped by the set-screw normally used to fasten the end of the valve stem.

speed which will allow the welder to apply full buildup of the hard-facing metal in one revolution of the valve, and the metal applied as specified for the type and analysis of material used.

The pressure of the impinging blast from the torch does not tend to shift the valve on the rotating disk, but instead, seems to apply additional pressure to prevent shifting. The relatively wide area of contact between valve and disk affords rapid heat transfer to the heavy copper mass, resulting in keeping the thin edge of the valve below temperatures at which distortion takes place. The use of a combination backing and rotating disk also permits the welder to flow metal out onto the disk, building up work which would not have sufficient metal to withstand the effect of the torch if an attempt were made to add metal without support.

Cast-Iron Disks

Use of the copper disk effectively provides against any tendency of the hard-facing metal to combine with the rotating unit, as might be the case were the supporting disk turned from steel. Where copper of the desired thickness is not available, or where so many different valve diameters must be accompanied that it is not deemed advisable to tie up so much copper, it has been found that cast-iron disks may be substituted for the copper. It is necessary of course, to select a close- or fine-grained iron for this purpose, and to be sure that there is sufficient width of metal beyond the edge of the valve to insure adequate heat transfer to prevent localization of hot spots and consequent warpage.

If cast-iron disks are used, care must be exercised that the heat of the torch is not allowed to overheat them at any point, as resultant reaction may tend to nullify, at least in part, the effective service expected of the hard-faced valve.

When applying hard-facing metal to the rebuilding of worn valves, it is frequently found desirable to use a larger tip than would be specified for applying mild steel. This is necessary to develop a large amount of heat at low tip pressure, producing a soft flame. The use of a smaller tip, with resultant excessive pressure or jetting action, would tend to cause too much agitation in the puddle of molten metal or, if carried to extreme, would even tend to blow the small pool of molten metal completely away from the area which is desired to be built up.

Use of the excess acetylene feather, as shown in Figure 3, aids in dissolving oxides, acts as a flux, and enables the skilled welder to produce the desired builtup surface free of pinholes, defects, and areas which must be ground down with consequent waste of abrasive and hard-facing materials.

Oil and Gas Board Men For Alabama Appointed

Oliver Young of Vernon, Milton Fies of Birmingham, and F. P. DeVane of Choptaw, have been appointed by Governor C. M. Sparks of Alabama to serve on a newly established Alabama Oil and Natural Gas Board.

The board was created by act of the 1945 legislature and fixes a drilling tax of $25 a well and a 2 percent gross recepits tax of the gross value of production.

Water-Input Wells

■ CONTINUED FROM PAGE 40

Or, in customary units:

$$Q = \frac{0.00154\, k\, h\, \Delta p}{\mu\left(\log_{10}\frac{W}{r_w} - 0.420\right)} \quad \ldots\ldots\ldots (8)$$

Where:

Δp = difference in sand-face pressure between input and producing wells, atmospheres.
D = distance between input and producing wells, centimeters.
W = distance between like wells, feet.

It may be assumed that the average intake rate during the time between interference and the complete filling of the pattern is the mean of the rate just prior to interference, and the steady rate of the pattern. The time required to reach the steady rate can then be computed, using the additional volume of water which must be injected between interference and fillup; and the curve can be interpolated, as shown by the dashed line in Figure 1.

The effect of the interference is shown as a shoulder on the curve. Such shoulders have been noted in some actual input-decline curves; but, as a rule, they are eliminated by the fact that sand bodies consist of numerous layers of varying permeability. This is illustrated in Figure 2, which is the calculated input-decline curve of a hypothetical well, with the following conditions: 5-spot patterns, 300-foot spacing between water wells, 15-foot effective radius, 1000 psi pressure differential, 1 centipoise viscosity of water at formation temperature, and 0.07 fraction of total sand volume to be filled by the injected water. The sand consists of four beds, as follows:

Thickness (Feet)	Effective Permeability to Water (Millidarcys)
10	1
5	5
10	10
5	20

The time when complete fillup takes place in each of the beds is shown by arrows. The curve of Figure 2 shows the sum of the intake rate of each of the 4 beds at any particular time computed from Figure 1, which is based on equations (6) and (8).

The input-decline curve of an actual well in the Bradford Field is shown in Figure 3.

The input-decline curve of a well (054) in the Clintonville Field (in Pennsylvania) is shown in Figure 4. This curve, like that of most wells, is somewhat complicated by variations in pressure. The well is 980 feet deep, the sand has a thickness of 11 feet, of which 9 feet were shot. The average permeability is 165 millidarcys.

Figures 12, 21, 22, and 23 (to appear in later installments) are other examples of actual input-decline curves.

(To be continued.)

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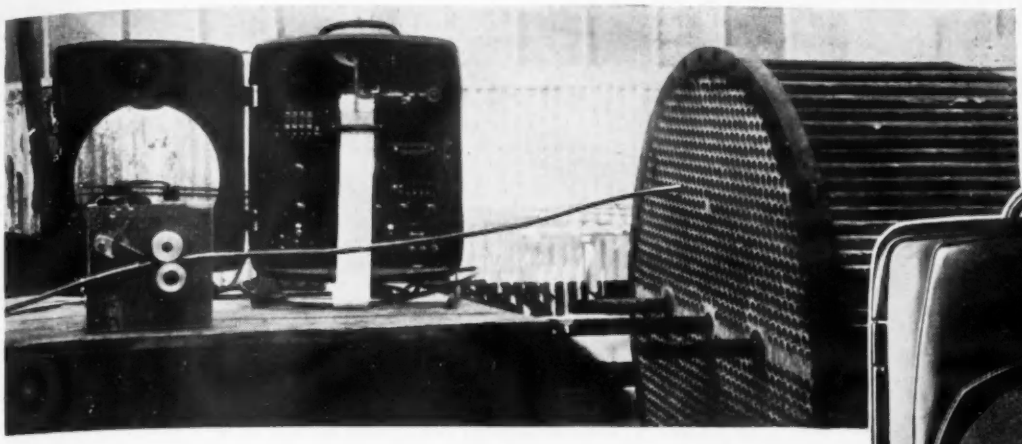
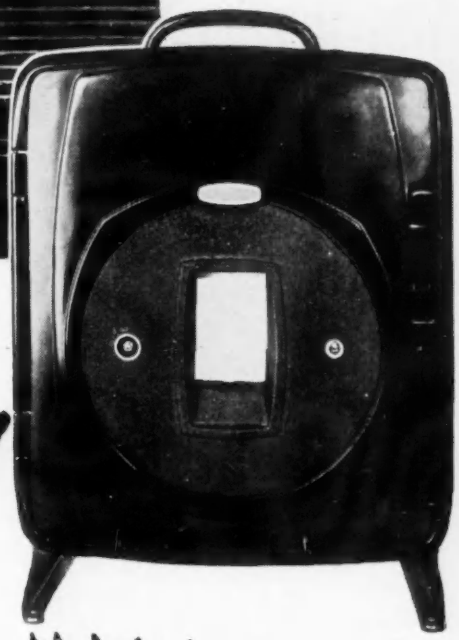
[3] M. Muskat, *op. cit.*, 479 and 561.

[4] A. J. Saxe and S. T. Yuster, "Mathematical Analysis of Field Results," *Producers M.* **2** [3] 8-13 (1938).

[5] This chapter is abstracted, with some modifications, from a paper by S. T. Yuster and J. C. Calhoun, Jr., entitled "Behavior of Water-Injection Wells," published in *Producers M.* **9** [1] 40-48 (1944).



Probolog in use inspecting tube bundle. Picture shows probe in tube, probe puller withdrawing probe at constant rate, and recording instrument charting internal tube condition.



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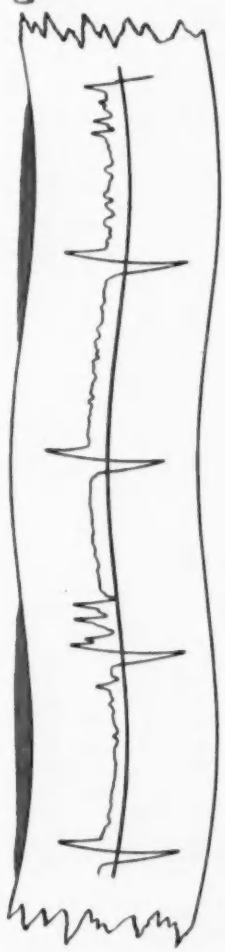

Actual graph of defective isobutane condenser tube.

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Completions Show New Decline

THIS year will record around 25,600 well completions or less in the United States if the reduced rate of drilling in October is not increased in November and December. This would be about 7 percent more completions than the approximately 24,000 reported in 1944 and would compare with 27,000 originally sought for 1945 by the Petroleum Administration for War.

During October, wells were completed at the rate of 499 per week, lowest since last May. That figure compares with 542 weekly in September, 502 in August, and the year's peak of 558 weekly in July. It compares with 529 completions per week in October of last year and 709 weekly in October of 1941.

The reduced rate of completions in October as compared with preceding months apparently reflected the uncertainties and disturbed conditions of the early postwar period. For it is easy to understand that operators show some hesitancy in drilling new wells in view of the substantial decline that has occurred in the demand for crude, while there is still uncertainty regarding future demand.

However, recession of drilling probably is a temporary conditions, as is the decline in demand for petroleum products and crude. At least some of the larger companies are planning to increase, rather than reduce, drilling in the coming months. One of them has expressed hope that return of veterans and release of war industry workers will enable it to complete its originally scheduled program for 1945 although continuation of the war would not have permitted fulfillment of the program. There may be expected especially a continuation of wildcatting upon an intensive basis, as the industry generally realizes the need for finding today the new fields that will be needed tomorrow in meeting the increased demand for crude which coming years will bring.

Although well completions were at lower rate in October than in September for the country as a whole, the decrease was well distributed, and only a few districts showed pronounced declines, including Illinois and Indiana.

In the first ten months of this year there were 21,574 total well completions in the United States, an increase of 7.5 percent over the 20,067 reported in the corresponding months last year. Texac accounts for a considerable part of the increase, having had 6146 completions or 21 percent more than the 5084 in the like period last year. All districts of the state show increases except South Central Texas, and the greatest increases are indicated for the Gulf Coast, North Texas, and Panhandle. Louisiana has had 38 percent more drilling than last year, and Oklahoma 30 percent more, while Mississippi has had almost twice as many completions. California shows a 7 percent increase, Michigan 12 percent, New Mexico 6 percent, Colorado 71 percent, Wyoming 7 percent, Kansas less than 1 percent.

There have been fewer completions this year than last in Arkansas, Illinois, Indiana, Iowa, Kentucky, Nebraska, Montana, New York, Pennsylvania, and West Virginia.

Completions in First 10 Months 7.5 Percent Above Last Year

(Figures compiled from weekly reports of editorial men, with following exceptions: Illinois from Illinois Geological Survey; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Allegany, New York, Bradford and Kane-Clarendon, Pennsylvania, from the Producer's Monthly; Tennessee from Tennessee Division of Geology)

	MONTHLY COMPLETIONS: October, 1945									CUMULATIVE COMPLETIONS: First Ten Months								RIGS IN OPERATION					
	Details for Oct., 1945					Total Completions				Details, Jan.-Oct., 1945					Total Completions				Details for Oct. 31, 1945			Total: Drilling and R. U.		
	New Wells				Old Wells Deepened					New Wells				Old Wells Deepened										
State or District	*Oil	Gas	Dry	Others[6]		Oct., 1945[1]	Sept., 1945[3]	Oct., 1944[2]	Total Footage October, 1945	*Oil	Gas	Dry	Others[6]		Jan.-Oct., 1945[4]	Jan.-Oct., 1944[5]	Percent Change	Total Footage 10 Months 1945	Drilling	Rigs Up	Shut Down	Oct. 31, 1945	Sept. 30, 1945	Oct. 31, 1944
Alabama	1		3			4	4	2	22,217	11	1	19			31	31		113,095	8	1		9	10	3
Arizona															1	6								
Arkansas	11		8		1	20	14	21	92,195	99	3	57		2	161	193	— 16.6	671,562	40		10	40	30	30
California	158	7	43			208	159	172	895,662	1,504	39	281		8	1,832	1,714	+ 6.9	7,535,829	228	57	47	285	297	371
Colorado	8	1	3			12	10	4	77,800	30	3	8			41	24	+ 70.8	246,663	59	7	10	66	61	13
Florida			2			2		2	16,938	1		12			13	3	+333.3	90,898	5			5	3	4
Georgia								1				6			6	8	— 25.0	19,502						
Illinois	83		47		6	136	233	190	480,442	872		567	13	128	1,580	1,660	— 4.8	3,860,216	183	37	15	220	205	253
Indiana	6	4	14			24	28	34	33,245	89	21	156	1	7	274	287	— 4.5	423,120	49	14	7	63	50	51
Iowa												1			1	2	— 50.0	1,250						1
Kansas	79	31	60	1	5	176	149	129	544,362	654	130	578	8	57	1,427	1,424	+ 0.2	4,498,024	263	20	13	283	280	273
Kentucky	51	3	31			85	76	91	137,397	258	67	204	1	2	532	681	— 21.9	925,311	70	18	10	88	85	110
Louisiana	64	13	28		2	107	96	58	720,492	524	64	279		5	872	630	+ 38.4	6,170,991	184	19	6	203	178	178
North	27	10	14			51	48	26	220,322	170	55	123		1	349	230	+ 51.7	1,620,507	83	11	6	94	69	89
South	37	3	14		2	56	48	32	500,170	354	9	156		4	523	400	+ 30.8	4,550,484	101	8		109	109	119
Michigan	18	3	51			72	64	79	180,842	251	34	356	2	1	644	574	+ 12.2	1,669,417	109	24	28	133	130	111
Mississippi	14	2	20			36	32	17	245,987	170	5	147			322	164	+ 96.6	2,111,613	47	5	2	52	59	45
Missouri		1	3		1	5	3	4	3,729	3	9	30		3	45	37	+ 21.6	49,127	2	2	4	4	2	2
Montana	22	3	10	2		37	14	27	98,005	140	14	44	2		200	284	— 29.6	514,951	58	9	9	67	66	56
Nebraska								3				3			3	15	— 80.0	11,512	1		3	1	2	1
New Mexico	35	2	12			49	25	41	195,713	241	12	104		2	359	337	+ 6.5	1,278,173	88	3	14	91	102	101
New York	65			37		102	112	114	136,950	605	3	4	342		954	1,056	— 9.7	1,292,368	112	12	24	124	119	114
North Carolina												1			1			4,044						
Ohio	27	41	61			129	80	88	337,638	210	288	343	5		846	822	+ 2.9	2,123,922	167	23	41	190	192	190
Oklahoma	106	10	67	2	6	191	179	145	707,971	1,149	87	647	35	41	1,959	1,501	+ 30.5	7,873,477	483	32	19	515	451	525
Pennsylvania	122	35	7	111	1	276	250	273	487,636	1,196	205	44	1,030	16	2,491	2,574	— 3.2	4,300,045	251	30	57	281	281	313
South Dakota			1			1			4,950			1			1			4,950						
Tennessee												3			3	9	— 66.7	6,721	1			1		1
Texas	383	63	250	6	12	714	559	517	3,255,100	3,423	581	2,019	32	91	6,146	5,084	+ 20.9	27,299,774	1,117	48	101	1,165	1,141	1,236
E.Tex.Border	2	12	4			18	14	4	124,624	9	62	23			94	28	+235.7	611,603	57	1		58	27	21
E. Tex. Field								1								4								
RestofE. Tex.	21	1	11		1	34	22	19	205,662	100	10	87		3	200	234	— 14.5	1,269,392	48	6	6	54	51	58
North	100	2	83	6	1	192	136	110	489,558	787	13	650	29	17	1,496	1,168	+ 28.1	3,672,461	178	14	20	192	174	142
W. Central	14	3	16		1	34	41	33	91,839	163	43	183		6	395	341	+ 15.8	1,075,365	74	6	39	80	86	62
West	103	2	41		5	151	115	143	776,798	1,102	13	321		31	1,467	1,328	+ 10.5	7,078,576	404	5	21	409	400	462
Panhandle	17	28	5		3	53	55	37	158,314	158	295	39		24	516	247	+108.9	1,561,605	89	5	5	94	103	167
Upper Coast	32	7	34		1	74	57	59	534,817	325	37	229	1	6	598	493	+ 21.3	4,380,048	85	4	5	89	89	118
Lower Coast	71	6	30			107	72	63	673,308	561	77	243	1	3	885	776	+ 14.0	5,623,663	127	7	2	134	148	141
Southwest	21	1	18			40	41	38	160,253	196	29	188		1	414	376	+ 10.1	1,650,204	32		1	32	43	39
S. Central	2	1	8			11	6	10	39,927	22	2	56	1		81	89	— 9.0	376,857	23		2	23	20	26
Utah																1			5	2	2	7	6	
Washington												1			1			3,200						
West Virginia	9	48	14		1	72	74	87	189,528	75	469	97		33	674	802	— 16.0	1,741,577	69	11	17	80	69	126
Wyoming	25	2	12			39	8	16	60,130	115	4	36			155	144	+ 7.6	568,679	83	13	13	96	99	89
Total U.S.	1,287	269	747	159	35	2,497	2,169	2,115	8,924,929	11,620	2,039	6,048	1,471	396	21,574	20,067	+ 7.5	75,410,011	3,682	387	452	4,069	3,918	4,167

* Includes distillate wells. [1] Wells completed in 5 weeks, or 35 days, ended November 3, 1945. [2] Wells completed in 4 weeks, or 28 days, ended October 28, 1944. [3] Wells completed in 4 weeks, or 28 days, ended September 29, 1945. [4] Wells completed in 44 weeks, or 308 days, ended November 3, 1945. [5] Wells completed in 44 weeks, or 308 days, ended October 28, 1944. [6] Water input, gas injection, and salt water disposal wells.

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J&L STEEL

Tax Review

A Regular Feature of THE OIL WEEKLY

By WILLIAM O. TAYLOR*

This column is designed to review legislation, judicial decisions, administrative rulings and policies, and topics which are of current interest to the oil industry, from a tax viewpoint. It will be published as frequently as new developments seem to require.

House Concurrent Resolution No. 50 Did Not Change Law With Respect to Drilling Costs:

MANY people have thought that House Concurrent Resolution No. 50, passed by the present Congress as an aftermath of the *F. H. E.* case, wrote into the law the opinion to deduct drilling costs in computing taxable income. That it did not do so seems obvious from the fact that it did not purport to amend the Internal Revenue Code, which is supposed to contain all the law of the land with respect to the levying of taxes, and the further fact that it was not presented to the President for his approval or veto, which must be the case if a congressional act is to have the effect of making new law or changing old.

The Fifth Circuit Court so held recently in denying an application for rehearing in the same *F. H. E.* case, in which the taxpayer apparently argued that, under Resolution No. 50, drilling costs are deductible without regard to whether they may have been incurred on a well which was drilled to acquire a lease. Calling the option a "special favor" to the oil industry, the court said the resolution was no more than an assurance that a majority of Congress is in favor of it.

Even in that capacity, it is quite a comfort. The Treasury has made it known recently that it will bring up the matter of drilling costs again when the revenue laws come up for a general overhauling, which should be some time next year. As long as more than half the members of Congress believe that the option is justifiable, the Treasury won't get very far.

* * *

Question of Sale v. Lease Decided In West Case

The case of *West v. Commissioner*, ——F (2d)——, decided recently by the Fifth Circuit, has been the subject of considerable comment in oil circles, occasioned to some extent, no doubt, by the large amount of tax involved. The transaction out of which the case arose was the sale by the Wests of a ranch, including the Friendswood and Clear Lake oil fields, to Humble Oil & Refining Company. The instruments by which the sale was effected were couched in language usually employed in making a sale of a mineral interest. The Wests retained royalty interests (usually 3/8) in most of the land covered by the transaction. There were provisions, however, not usually found in a conveyance of a mineral interest, including a requirement that Humble keep two rigs running in proven areas until one well for each 20 acres had been drilled, an option in the Wests to require the drilling of a certain number of test wells at other places on the land, offset requirements under certain circumstances, graduated royalty provisions dependent upon production depths, and a right in the Wests to be represented at certain times during operations and to be furnished with well logs.

The government's position, which was sustained by the court, was that insofar as minerals were concerned the Wests made a lease rather than a sale, from which it followed that they were not entitled to the benefit of the capital gain provisions. Both the Tax Court and the Fifth Circuit found factors in favor of the taxpayers' contention that they had made a sale of the minerals, but both felt that the presence of so many provisions commonly found in leases justified their holding that the transaction was more like a lease than a sale.

The result is an unfortunate one but the case can hardly be regarded as a landmark in tax law. The decision can be attributed for the most part to the old *Harmel* case in which it was held generally that rules of property law of a state need not be adhered to in deciding federal tax questions and specifically that the usual oil and gas lease is not a sale of minerals for tax purposes even though it is under Texas law. Add to this the oft-quoted rule that, in tax cases, courts will "look to substance and not to the form of a transaction" and the more recent development that transactions are to be viewed in the light of their 'economic results," and the groundwork is sufficiently laid for such decisions as that in the *West* case.

Since the transaction in the *West* case was made, greatly increased tax rates and relatively favorable capital gains treatment have provoked no end of ingenuity among taxpayers in devising complicated transactions intenedd to be of tax benefit. Doubtless, the next few years will see many of them hauled into court to defend their creations.

* * *

Treatment of Dry Hole and Bottom Hole Contributions:

Until a couple of years ago or so, taxpayers were allowed to charge off contributions made by them to the cost of a well drilled by some other operator in the vicinity of a lease or leases owned by the taxpayer. The position of the government now is that such a contribution may be charged off only if the well as to which the contribution is made is non-productive. If it is a producer, the taxpayer must treat the amount of his contribution as a capital item, i.e. as additional cost of those of his leases which are so located with respect to the well as to be "benefited" by the information which he received from the drilling of the well. No official ruling on the subject has been issued, but an informal letter of the Commissioner of Internal Revenue to the above effect has been made public and revenue agents have been applying the rule, with varying degrees of consistency, for two or three years.

The rule is purportedly based on the already badly over-worked case of *Schermerhorn Oil Corporation, 46 B. T. A. 151*, which is also the basis (or, if you please, the excuse) for the government's position with respect to geological and geophysical expenditures. The fallacy of the government's position in case of well contributions is demonstrated by its explanation of why the contribution may be charged off if the well is dry. It is said, in that case, that the one who paid the contribution is presumed to have gotten no benefit from it. As a matter of fact, he may well have benefited greatly in that he was able to decide that his lease or leases were no good without incurring the expense of drilling a well on them to find out. On the other hand, if he is required to capitalize his contribution because the well is a producer on the theory that his adjoining leases have been benefited by having been proved very valuable, then the same reasoning should apply if an operator drills his own lease and, by getting a producer, proves the value of other leases owned by him in the area. So far, the government has not suggested this result.

The practice of making well contributions is so widespread in the oil industry that there seems to be good support for the argument that such expenditures constitute ordinary and necessary business expenses, and that they are deductible whether or not the well involved is a producer. As a general proposition, expenditures are treated as capital items only if they result in the acquisition of some property right. Information may constitute property under some circumstances, but it is very doubtful whether such is the case with information acquired by well contributions.

☆ ☆ ☆

Atomic Power as Commerce Aid Is Urged by Green

W. G. Green, president of Engineering Laboratories, Inc., Tulsa, and one of the originators of radioactivity well logging, told the Tulsa Purchasing Agents Association that the importance of the atomic bomb is being overestimated and that the government should give industry every consideration in exploiting atomic energy.

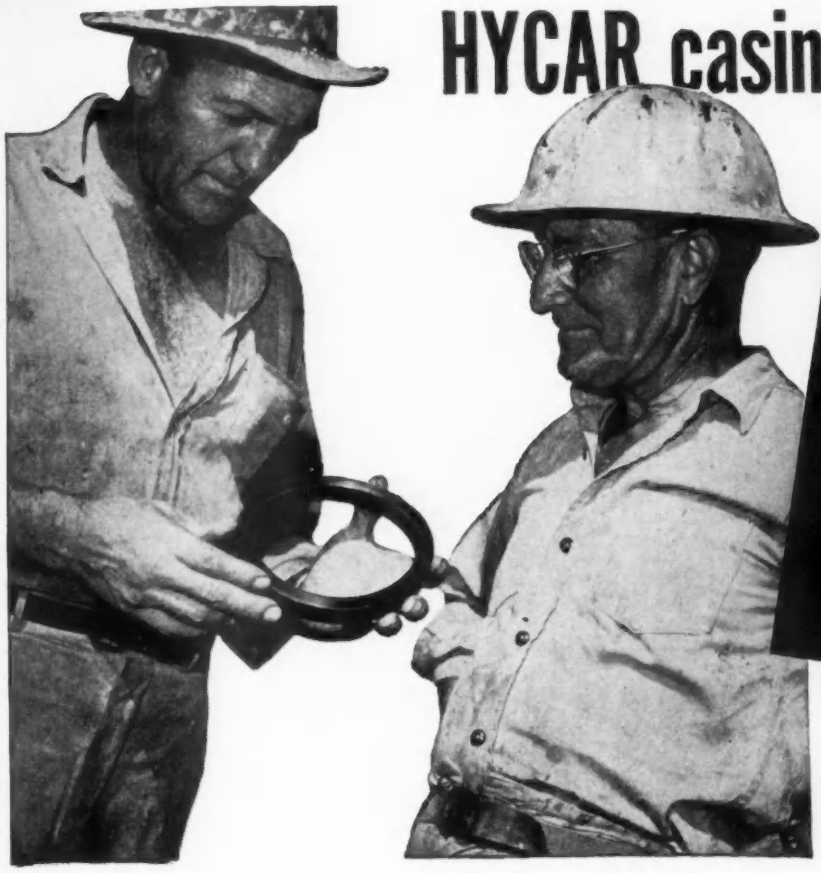
Green pointed out that by-products developed in the government's work on the atomic bomb could prove beneficial in at least four industrial uses that have nothing to do with an explosion.

"We feel the government should release those parts of atomic power which would be of use in commerce; we don't care what they do with the atomic bomb itself," Green said.

Pointing out that the principle of atomic energy has been known to scientists for years, Green cited the case of radium and declared that there are other types of nuclear energy now being used for the benefit of mankind. Release of certain by-products in the manufacture of the atomic bomb would be of considerable benefit to the oil industry.

* The author is a member of the firm of Butler, Binion, Rice & Cook.

HYCAR casing seal rings . . .



INSURANCE against casing hanger leaks

Photos courtesy Beaumont Iron Works Co. Hycar parts courtesy Murray Rubber Co.

FOR insurance against casing hanger leaks, Beaumont Iron Works Company uses HYCAR seal rings in their hangers. Every production man knows what a casing hanger leak can mean. Between surface casing and protector string, for example, it can mean greatly reduced well production and, frequently, disastrous and costly damage.

Welded seals have been, and still are, used. But with the increased use of high-tensile steel such as Grade N-80, good welded seals are difficult to make and maintain because they require a high degree of welding skill and quantities of special equipment not generally available in the field. And welded seals are subject to corrosion from oil, gas, and salt water. That's why resilient seals made from HYCAR are widely used in this tough service.

HYCAR resists indefinitely the action of these and many other destructive materials commonly encountered in oil field service. HYCAR seals *stay* resilient and maintain a *positive* seal for years. Throughout the oil industry—in production, refining, transportation, and marketing — HYCAR's properties, shown in the list at the right, have made it the standard resilient material. Ask your suppliers for parts made from HYCAR—gaskets and seals, hose, grommets, valve inserts, and many others. Learn for yourself that it's wise to use HYCAR for long-time, dependable performance. *Hycar Chemical Company, Akron 8, Ohio.*

WHAT HYCAR DOES IN OIL FIELD APPLICATIONS

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Old Drilling Chain Serves as Tool Rack for Misc ellaneous Hand Equipment

A worn out rotary table drive chain finds many uses around a well, mainly because pieces of it are usually abundant, rarely being discarded when the rig is moved. One operator strings a 10-foot piece between the leg of the jack-knife derrick and the standpipe.

TOOL STORAGE

Into the space between the rollers, the crew thrusts every tool that has a handle. This keeps various wrenches, brooms, etc., out from underfoot and adds to the appearance of the derrick floor. When the rig is moved, the ends of the chain are loosened and the tools rolled up into a compact bundle, being again strung on the next location as soon as the derrick is up.

Unless the chain is badly worn, there is still sufficient closeness in the joints between pin and roller to prevent the device from turning over enough to release stored tools, even when the weight of such units tending to cause canting of the chain is considerable. To simplify detaching the tools, it may sometimes be found advisable to anchor the center of the catenary curve with a wire or light turnbuckle near the center.

Inspection of tools is facilitated by mounting in open view.

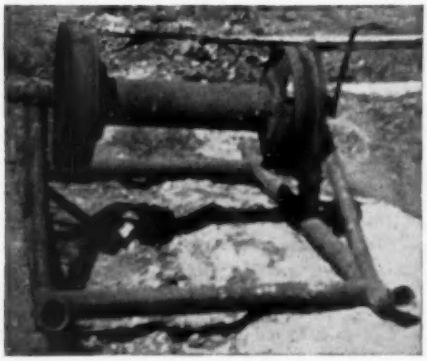
Built-Up Reel for Transporting Derrick Line

Protection of the derrick line when a rig is on the move is a problem which confronts every drilling contractor. If the line be thrown across the load of miscellaneous material, there is always danger that the fibres may be crushed or damaged so that a failure will occur under load. If the coil be wound on the sand-line reel, it frequently happens that the two are late arriving at the next location, with consequent delay in setting up.

ROPE HANDLING

One contractor transports the derrick line on a special reel, skid-mounted to afford maximum ease in handling. The reel drum is a section of 6-inch casing, welded to the inside flanges of a pair of salvaged truck wheel disks. An axle, made of 1½-inch pipe, is passed through the hubs of both wheels and welded in place concentrically with the rims of the wheels and the drum. A detachable crank on one end of the shaft provides for revolving the drum.

The drum is supported in sleeve bearings at the tops of two A-frames welded up from 2-inch pipe and carried on a skid of the same or heavier tubular goods. A 2 x 4 timber, laid across the end of the skid and bearing against the flat portion of one wheel, serves as brake while paying off line to the derrick when restringing for the next job.



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For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

See Pages 2450 to 2455, Composite Catalog.

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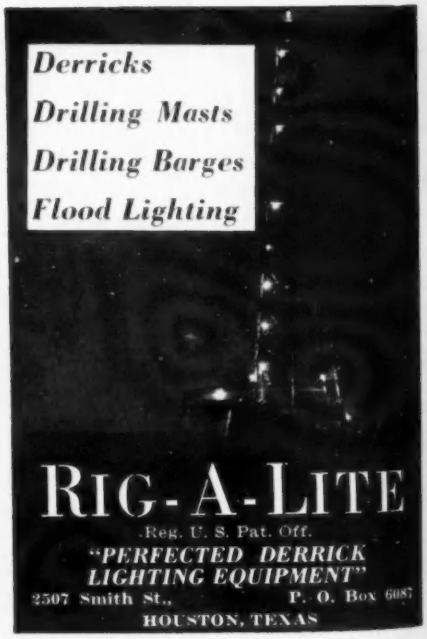

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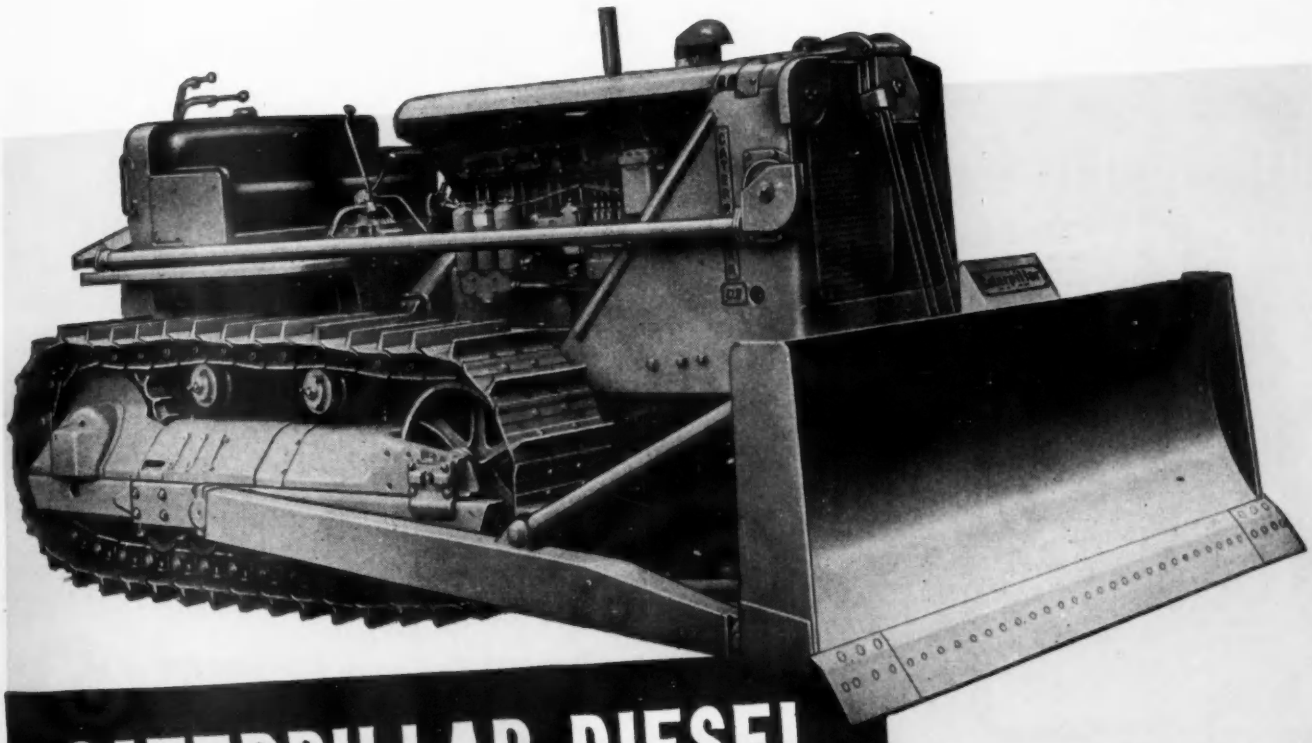

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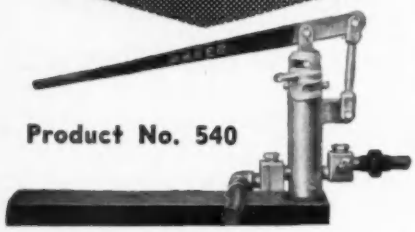
It's the handiest thing you ever had in field or shop for *extracting*



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cores, testing pipe or fittings, and dozens of other uses.

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Rope helped construct the Panama Canal – the incredible "big ditch" that joins the world's greatest oceans. The French began the canal in 1882 but Yellow Fever caused their failure. The United States Government bought the project in 1904 for 40 million dollars and the first vessel made the trip through on August 15, 1914.

Vitally important to canal traffic – and to American Industry as a whole – Rope is still on the "scarce" list. Until you can once more procure New Bedford Manila Rope, take care of what you have. Write today for our free booklet "Care and Conservation of Rope." You'll find it worth while.

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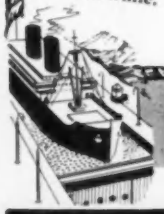

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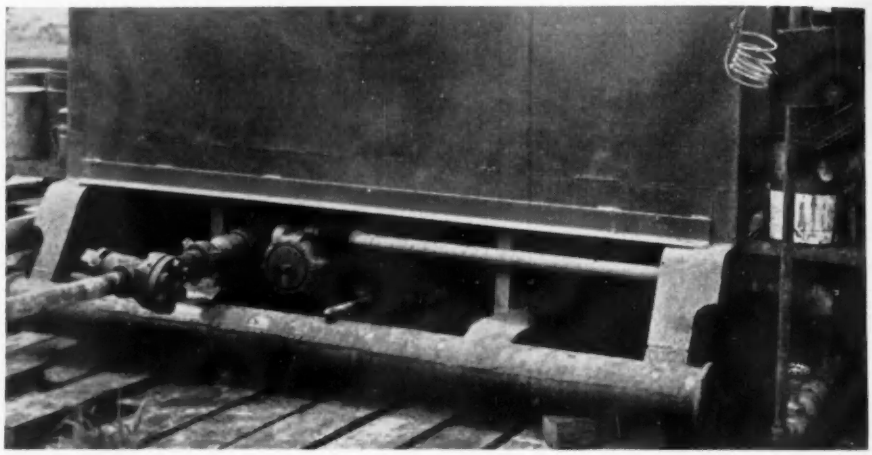
Outside-Mounted Guns Aid in Rig Cleaning

Even though the "business end" of the grease gun may have been carefully wiped after being used, pressure within the gun frequently results in a slight ooze of oil or grease which soon makes the unit a hazard for clean clothes — as well as adding to the hazard of work clothes which already have lost their original laundry freshness.

CLEANER FLOORS

One contractor prevents soiling of clothing by furnishing a grease-gun rack in which the guns are supported outside the working floor, with the ends free to drip onto the ground with no chance of their being contacted by crew—or visitors in "store" clothes.

Double-Ended Lines Simplify Tie-Ins to Pumps



To facilitate connections on the steam and exhaust lines carried within the skid structure of the water pump assembly, it is customary to bring the skid mains out through the end of the unit, rather than attempt to make connection along the front toward the boilers.

PUMP HOUSE

One contractor goes another step forward in this design of feed-water pump skid piping, by running parallel mains for live and exhaust steam throughout the length of the skid, with the necessary taps for the various pumps and other power units on the deck of the skid being made through welded nipples and quick-acting unions. The mains are brought out to a standard distance beyond the pump house on each end, the unused end of each main being blanked off with a union and blind.

To avoid concentrating the piping in a small area, the skid is normally connected up with live steam entering at one end, the exhaust main emerging from the other.

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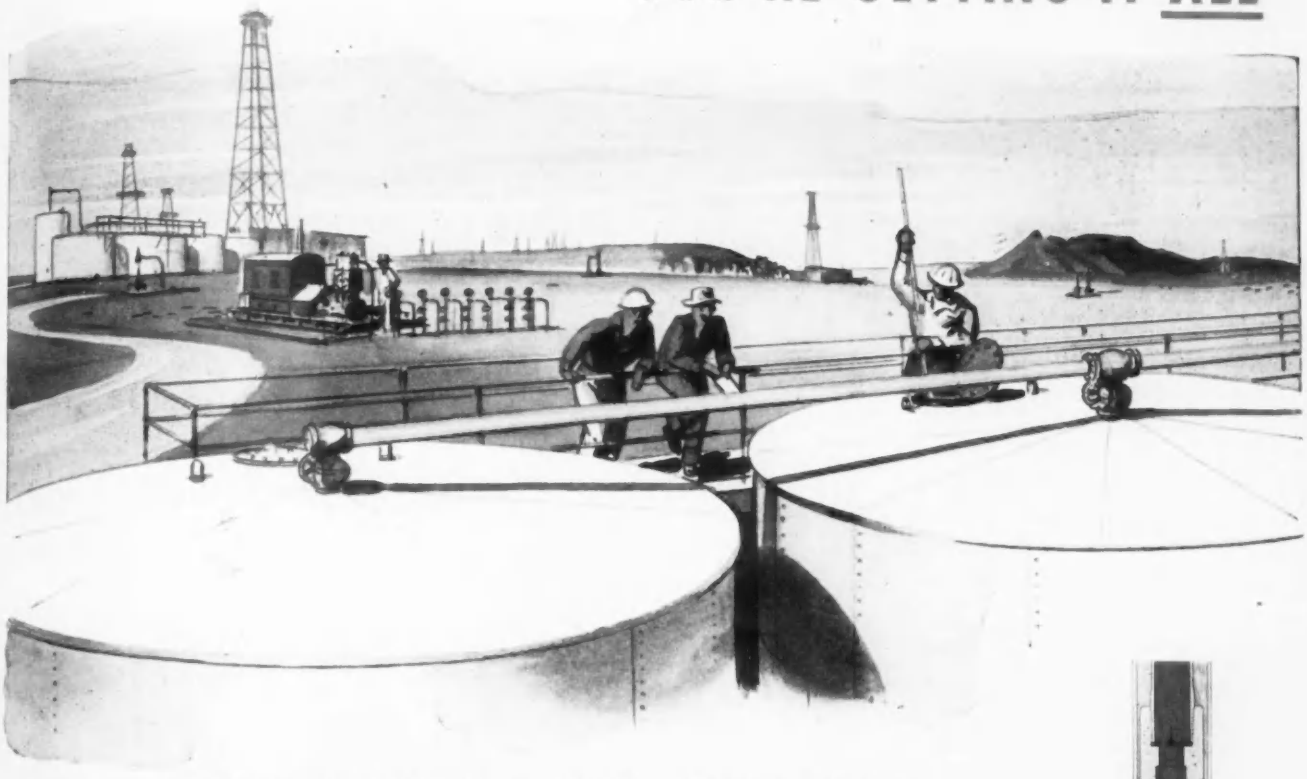

DON'T LOSE OIL YOU CAN'T PUMP

Thousands of barrels of oil have been lost because there wasn't any way to tell for sure whether a pumping well was being produced to its maximum or not. For the same reason many wells have been pumped harder than their capacity made advisable, causing damage to either or both the well and its equipment.

Knowing just where the pumping fluid level in a well is at all times makes it possible to produce it better and more economically. Withdrawal rates can then be constantly adjusted to the best depletion program, useless damage to equipment can be avoided and operating adjustments made quickly and easily to meet changing well conditions.

Only the Fluid Power of Hydraulic Pumping can give you a constant, reliable check on these important facts, because the operating pressure gauge on a Kobe pumped well tells you at all times where you are pumping from. The lower the pressure, the higher the fluid level; and the greater the pressure the deeper you are going to get your fluid. Anyone can quickly convert pounds of pressure to depths in feet, so that the depth of your operation can be quickly read on this surface gauge at any time you wish to know it.

More wells are being produced every day by fluid power pumping. Better operating information is only one of the many advantages of this modern method. It can help you meet the competitive requirements of more oil at less cost; and any Kobe representative will be glad to receive your inquiry and show you in detail how this system can be advantageously applied to your pumping needs.

The double acting positive stroke of the Kobe Hydraulic Production Unit insures maximum production at any depth.

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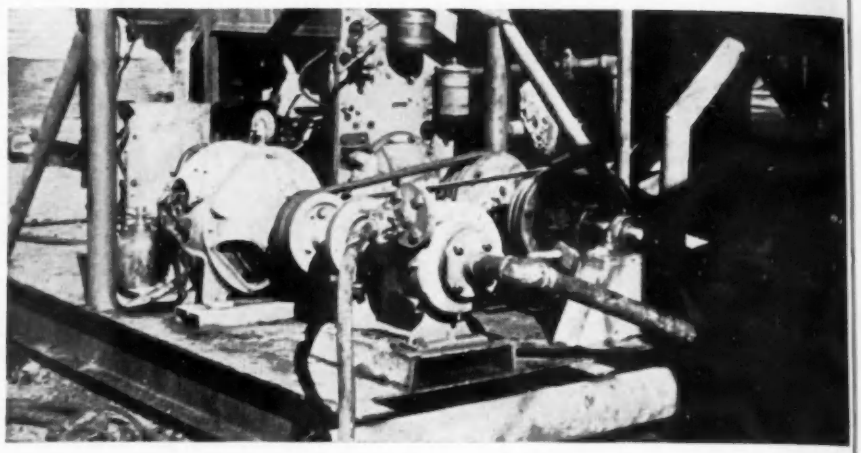
Compact Auxiliary Unit Requires Single Engine

On an internal-combustion engine driven rig the auxiliary units are frequently driven from the main power set-up, but it often is found desirable to have the wash-water pump and generating unit separately powered, in order to insure water and current supply when the big engines are down for overhaul, or during long stand-by periods when it is not economical to have one of the large engines in service.

AUXILIARY EQUIPMENT

A single engine may be used for driving both pump and generator, all placed compactly on a small skid unit, if the engine drive be to a jackshaft, instead of direct-connected to either unit. The jackshaft is equipped with two V-belt sheaves, the one next to the engine being keyed in place, the other operated through a clutch.

The fixed sheave is used to drive the generator, desired speed ratio being obtained by proportioning driver and driven sheaves. The clutch unit powers the belt drive to the pump. If current alone is required, the clutch permits the centrifugal unit to be cut loose; while if water is required and no current, the voltage regulator on the generator is set to zero, and that unit then acts merely as a second flywheel for the engine.

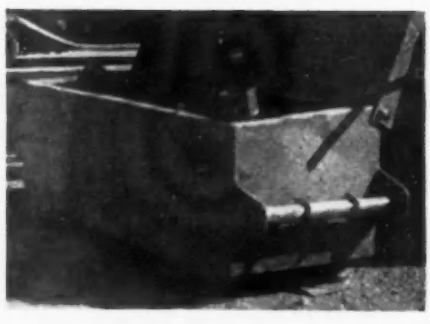


Rollers Add Mobility to Heavy Tool Box

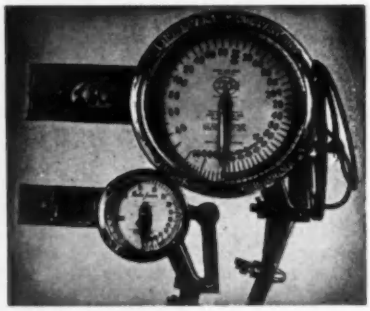
The steel box in which is carried all the miscellany of hand tools, wrenches and hammers for servicing pumps, engines and other equipment around the rig is frequently so heavy that it will require the service of a crane, winch-link truck or derrick to move it from wherever it may chance to be placed.

TOOL HANDLING

If the contents are required at some spot other than the immediate vicinity, it is necessary either to remove the tools —with consequent danger of loss—or to provide lifting equipment. One contractor simplifies this problem and permits the box to be moved as desired around the rig by mounting it on two fixed axles, each of which carries a pair of heavy steel wheels. While not suitable for use on the highway, these wheels do permit the box to be dragged around the rig by the pusher's car.



LINE SCALES



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With a Line Scale you know the pull on the line, and the weight on the bit in pounds. Accurate, sensitive, rugged and economical.

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DRILLING HINTS

Unitized Mounting Gives Compact Mud Line

MUD-LINE DESIGN

The saving in time of rigging up on two or three wells will pay for the cost of grouping the mud line control valves and gauge as shown. The discharge line is run directly from the pumps to the corner of the derrick to the front and right of the driller's station. The relief valve is made up on the riser from the end of the line with a short nipple so that the entire assembly can be screwed on the upward-looking ell without removing the fitting.

The pressure gauge and mud line block valve are made up in one assembly. This makes a unit small enough so that the gauge can be packed in the dog house where it will not be damaged, yet it can be assembled by means of the unions on each end of the assembly. This saves wear and tear on the gauge threads and also allows quicker installation.

Besides saving in the time and cost of rigging up, this arrangement puts the controls at a convenient height.

Pipe Shield Deflects Flying Shear Pins

SAFETY PROVISION

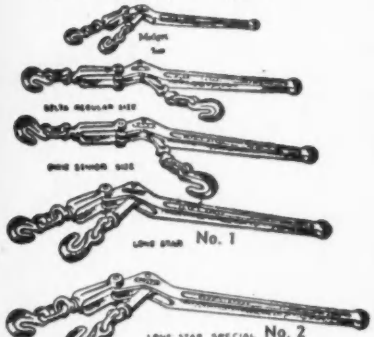
When the nail used in the shear-relief valve on the mud line is cut by a sudden excess of pressure within the unit, the severed ends of the nail frequently are driven with considerable force from the sockets in which they normally rest. This hazard is controlled on the rig in several ways, one simple method being to cut a short section of drill pipe or other heavy tubular goods with a diameter large enough to permit it to be slipped down over the valve without contacting the ends of the nail.

When a nail within such a shield is ruptured, the ends are driven out against the shielding pipe nipple, but are able to travel no further. If the nipple be made just long enough to extend up past the nail setting, it is possible to examine the pin for partial shear, bending or wear through mud-line vibration without removing the shield; thus assuring full protection at all times.

LOAD BINDERS

5 — Sizes — 5

Take from 1/4" to 5/8" Chain



Lone Star No. 1 and No. 2 are recommended for heavy duty service in oil fields

For details see page 810 Composite Catalog

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It Does Not Make an ATOM of Difference How You Compare Ropes — There Is No Substitute for Quality.

Backed by 141 years of manufacturing experience **FITLER ROPES** are known for their strength, durability, water-repellency and flexibility.

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RECTORSEAL

THE POSITIVE LEAK PREVENTER

Revamped Army Equipment Makes Excellent Field-Welding Transportation Unit

Surplus Army automotive equipment finds many applications in oil-field work apart from direct transfer of military loads to equivalent civilian cargoes. One such change is illustrated, showing how the company welder has converted the familiar "jeep" to a welding truck which not only carries all the necessary equipment but which also offers the additional advantage of optional four-wheel drive for traversing rugged terrain.

WELDING EQUIPMENT

From the front seat forward, there is no change made in the unit as delivered by the Army. The back seat is removed, being cut off with the torch just above the highest point of the rear fender. The ragged and relatively thin edge thus exposed is covered and strengthened by welding over it a section of ½-inch pipe, which has been slit with the torch down one side to permit it to be placed over the raw metal edge. Tack-welded in place, the pipe prevents cutting of hoses and hands, and affords support for material laid across the body of the vehicle.

The straps for retaining the cylinders are attached to the back of the front seat, leaving ample floor space for the electric welding unit. This latter is bolted to the steel bed of the vehicle in what was formerly the rear compartment.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

Anywhere!

Buckeye Trenchers minimize right-of-way work. Dig in any soil. Ruggedly constructed. Faster. Readily maneuvered. Model 12 (shown) for gathering, gasoline and small natural gas lines. Models 32 or 48 for main lines. The standard trenchers for pipeline work.

BUCKEYE TRACTION DITCHER COMPANY
Findlay, Ohio
Built by Buckeye
TRENCHERS. SHOVELS. CRANES
BACKFILLERS. TRACTOR EQUIPMENT.

Bolster Slot Assists Tie-Down of Small Loads

Utilizing to the fullest advantage the equipment on his truck, one contractor has found that the bolster hole may serve important services other than that for which it was originally intended.

MATERIAL HANDLING

When the trailer unit is not attached to the truck, the bolster pin hole or slot serves as a means of holding taut the hook end of cable wound on the power winch. Securing the hook in the manner illustrated eliminates a common source of trouble. Because there seldom is a means at hand for quickly binding the end of the cable to prevent fouling, the tangled end usually causes some delay in hooking it up the next time it is used. It takes only a few seconds to drop the hook into the bolster pin hole and draw the line taut, locking it in that position until it is again needed.

Another important use of this combination consists of employing it as a means of binding down a small load being carried behind the cab. Tying down a small piece of equipment that may have to be hauled for a short distance ordinarily would necessitate breaking out of lines for lashing it to the wide truck bed, but by using the winch cable and dropping the hook into the hole, then drawing it taut the load is quickly and easily secured. Handling the winch line in this manner will result in generally increased life and smoother handling on the winch, the neat coils on the pictured unit being testimony to the advantages resulting.

PIPE LINE HINTS

Tire Casing Section Protects Pipe on Trailer

PIPE HAULING

When a central reconditioning yard is used for reclaiming pipe during a line work-over, it is necessary to handle the pipe with care when trucking it back to the ditch to avoid breaking the coating or otherwise setting up weaknesses in the wrapping which will permit holidays and serve as focal points for corrosion. Usual practice for hauling pipe in the Mid-continent area is to use a float between the trailer and truck, and to bed the pipe down on cottonseed hulls.

When the float is not available, however, or when only a few joints of pipe are to be taken to a spot job, other means must be taken to prevent undue chafing of the pipe protection at the bolster. One company met this need by devising a split tire-casing protector as shown. This section of casing, sawed through from bead nearly to the tread strip at 8-inch intervals to permit it to be strung along the bolster, is nailed in place. The cushioning effect of this casing strip is sufficient to prevent the denting of thin-walled pipe, even on rough hauls, and effectively safeguards the protective coating from damage by the bolster.

Self-Binding Electrode Speeds Pipe Welding

WELDING GADGET

Contact between the pipe and the fixed portion of the electrical circuit necessary when arc-welding a line is obtained by one contractor through the use of a self-actuating clamp which is more effective than the usual flat plate, tack-welded to the pipe, and which is readily removed for transfer farther up the line.

The clamp consists of a 2-inch wide section of pipe wall, equal to a little more than half the pipe circumference, and opened just enough to slip easily over the size of line being welded. In the center of the curve, and at right angles to it, is welded a short length of 1-inch pipe, through which the end of the conductor cable is run, being clamped tightly in place by having the pipe flattened over the wire strands at the weld with the arc of pipe steel.

When placed on the line, weight of the cable tends to drag the pipe to one side, off the axis of the pipe, cramping the curved section tightly against the pipe wall, and making effective contact for carrying the welding current.

The cable end, guarded within the pipe section of the contact unit, is protected against accidental damage or possible grounding against the pipe wall, and service is greatly extended over the use of a plate with bolted or simple twisted contact between cable and contactor.

ALTEN
PIPE CARRYING TONGS

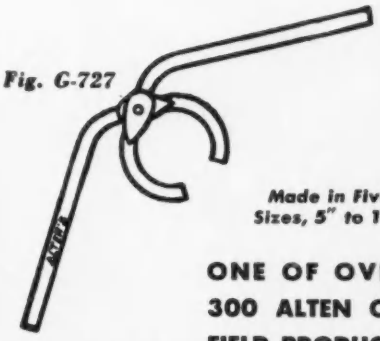

Fig. G-727

Made in Five Sizes, 5" to 12"

ONE OF OVER 300 ALTEN OIL FIELD PRODUCTS

See Composite Catalog for complete list or write us for catalog.

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Compressor Rings

Precision machined to close tolerance. All segments interchangeable within the set. Either radius or step cut with crimp or bull ring type expander.

Canvas base Spauldite rings withstand 225 deg. F. Asbestos base Spauldite rings withstand 325 deg. F. These 3-pce rings are also made for pump pistons.

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PUMP VALVE CO.
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ON BLOWOUT PREVENTER FILL-UP LINES

a dependable shut-off is essential

An easily operable, tight sealing valve on the blowout preventer fill-up line could be, literally, worth its weight in gold. The Cameron "Flex-Seal" is such a valve.

Of equal importance to its exceptionally low maintenance cost is the fact that Cameron "Flex-Seal" Mud Line Valves may be relied upon to effect a pressure-tight closure when needed. This is due to the fact that there are no delicate sealing surfaces to be damaged by the abrasive fluid. The conventional metal-to-metal seal has been replaced by a renewable resilient flow-way insert which provides a dependable seat for the steel gate and absorbs the abrasive action of the fluid. When finally worn out, the resilient insert can be easily replaced in the field by the drilling crew with ordinary rig tools for only a few dollars. In closed position, the gate stem indicates the amount of resilient material in reserve and replacement of the insert can be determined accordingly.

Complete details on all models of Cameron "Flex-Seal" Mud Line Valves are carried in the Composite Catalog, or a descriptive bulletin will gladly be sent on request.

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Cameron "Flex-Seals"

The Outlook

The present trading structure of the oil industry will be threatened in the suit shortly to be reopened by the Department of Justice, aimed at dissolution of the American Petroleum Institute, the divorcement of pipe line ownership from integrated company operations and revision of marketing practices. The forthcoming decision in the New York suit against the major film companies, involving the same issues in somewhat different guise, may indicate the trend of court thought on those subjects.

* * * *

Efforts to make another Teapot Dome scandal out of the tidelands situation won't get very far in view of the uncertainty of the government itself over a period of years as to where title lay. Even Secretary Ickes, whom nobody could accuse of sanctioning a grab of government lands or of favoritism to the oil industry, at one time felt title lay with the states.

* * * *

The State Department is heading toward another overhauling, this time directed to reorganization of the foreign service to give greater assistance to American nationals operating abroad. Major spur is the success of the British and Russians in tying up the trade of many areas in Europe.

* * * *

Political considerations from now on will increasingly color Administration policies and actions. The first test of President Truman's popularity as compared with that of President Roosevelt will come in the Congressional elections next year, when success or failure of the Democrats in retaining their hold on Congress may signpost the trend in the 1948 presidential election.

* * * *

With only moderate pressure, legislation modernizing the leasing laws will readily pass through Congress, where a very considerable bloc from the public-lands states, headed by Senator Joseph C. O'Mahoney of Wyoming, believe relaxation of some of the present acreage and other restrictions will mean a broad development of the government-owned oil lands.

* * * *

With a gradual return to normal peacetime conditions, increased consideration will be given to state conservation laws from a number of angles. Well-spacing provisions and the encouragement of secondary-recovery methods are among the major subjects which are expected to be agitated.

* * * *

Appointment of Sidney Latham as the Texas representative on the Interstate Oil Compact Commission appears uninspired. Representatives from other states are members of the regulatory bodies or outstanding members of industry. The governors of Kansas and Oklahoma have represented their states in recent years. While Latham is a charming gentleman with highest ethical standards, other necessary qualifications are lacking.

* * * *

Oil men are adjusting their tax situation to meet the forthcoming tax drop, incurring as many deductions as possible before January 1. Expenses incurred this year will serve to reduce income subject to the minimum tax rate of 85½ percent, while next year's expenses will yield less tax savings since maximum rate will be lower.

SIMPLICITY IS THE FIRST REQUISITE OF SAFETY

Look for the hazards that aren't there!

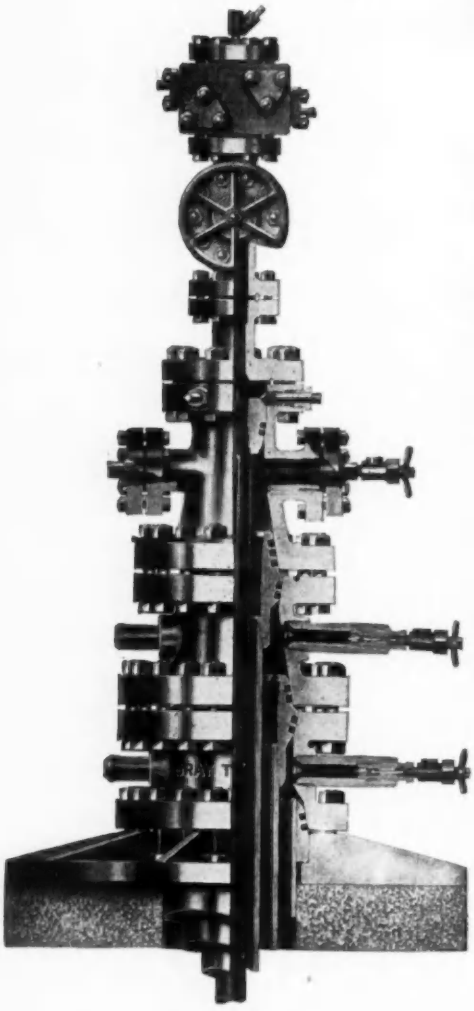

FIGURE 1A

Complete Well Head Assembly equipped with Composite Manifold, Valve Removal, Installation and Removal.

In Well Control, you eliminate hazards when you pick out a System of Well Control which provides for removal of each part as quickly as its operating function has been completed.

Many control mechanisms, such as **blowout preventers, valves, strippers,** etc., must depend for seals upon the use of short-lived, low strength packing materials and greases. These highly flowable materials stand up beautifully under factory tests when new, but disintegrate quickly in the field when called upon to operate over the life of the well.

In Gray Systems of Well Control, parts that have been removed after having performed their operating functions are NOT potential sources of trouble. The hazards disappear;—simplification results. It's economical, too, for these parts are used again and again on succeeding wells, instead of on the only well to which they have ever been attached.

BUT the main advantage lies in the fact, at the time of removing a part, you have likewise removed a hazard.

The whole is greater than any of its parts. Look for the hazards that aren't there.

THE WHOLE IS GREATER THAN ANY OF ITS PARTS

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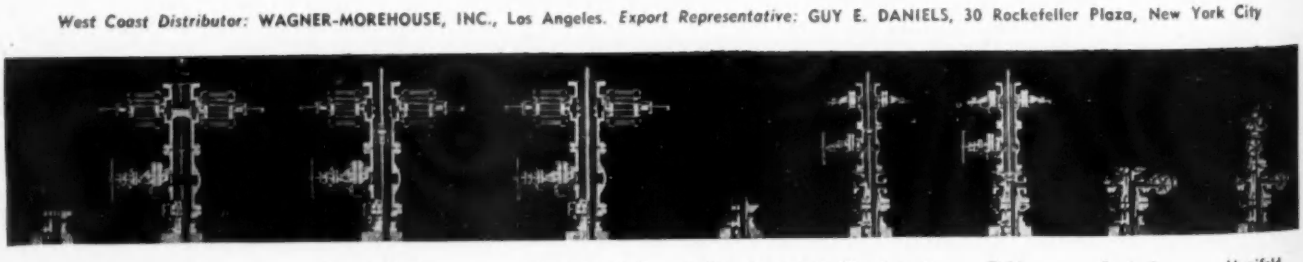

Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

The Week's News

HEARINGS on the disposal of government-owned oil facilities opened in Washington last week, with indications that the oil plants and pipe lines may offer a stern test of the government's policy with respect to plant disposals, which may upset traditional competitive relationships.

Labor Policies Criticized—Government policies in another field came in for discussion, with the Brookings Institution charging, first, that the Administration labor policy was opaque, and second, that it favored worker majorities at the expense of minorities and individuals. Page 72.

FPC Gas Hearing Opens—A Federal Power Commission hearing on the natural gas situation was opened last week at New Orleans with a charge being developed that Louisiana "changed its mind in midstream" about seeking prohibition on natural gas uses. Several major witnesses are yet to be heard, with the hearing probably extending through most of this week. Page 69.

Texas Allowable Set—The Texas Railroad Commission set December allowables at 2,029,706 barrels daily, which is 3134 barrels higher than in November. Page 71.

Alaskan Project Promising—The Navy's highly-important Umiat 1 has good oil showings, Staff Writer A. R. McTee learns. Page 72.

Colombia Strike Threatens—Also on the international front, a strike in Colombia threatens after the oil companies ignored a labor ultimatum. Page 73.

Texas Oil, Gas Group Elects—Fred W. Shield of San Antonio named head of Texas Mid-Continent Oil and Gas Association. Jesse Coleman Hunter, president of the Mid-Continent Oil & Gas Association, died en route to the association meeting, where he was to be honored. Page 73.

Pollution Fight Revived—The generation-old fight on stream pollution was revived in Congress with hearings before the House Rivers and Harbors Committee on a federal-aid program to enable the states and industries to treat and purify their wastes. Page 70.

Equipment Men Enlisted—OPA announced appointment of a committee on oil field equipment to assist in the pricing of materials. Page 71.

Industry-Government Differences on Future of Big Inch Lines Are Aired

The special Senate Petroleum Committee last week opened hearings on the disposal of surplus government-owned pipe lines and other facilities.

Even before the hearing had actually gotten down to bed-rock, it was apparent that there were intra-industry and industry-government differences of opinion over the future of the Big Inch pipe lines, the aviation gasoline facilities and the tankers which were constructed during the war with government funds.

Opening the hearings November 15, in a room, incidentally, far too small for the many oil men, reporters, government "observers" and onlookers who attended, Senator O'Mahoney, chairman of the committee, asserted that "Uncle Sam is property poor" and, after outlining the government-owned facilities, commented that "here we have the picture of a large fleet of modern tankers, two huge pipe lines and the most modern and efficient aviation gasoline plants that were ever constructed, to do what with in the postwar world?"

Jones Heard

At the very outset, W. Alton Jones, president of Cities Service Company and War Emergency Pipe Lines, Inc., told the committee that the proposals he would offer would not represent the unanimous opinion of the industry—that, in fact, there was no unanimous opinion in the industry on any subject—and that opposing views would be heard from members of the industry committee and others. During the course of Jones' presentation on pipe lines, O'Mahoney broke in to comment that the Marseilles pipe line, laid during the war by the army at considerable expense, was being torn up because neither the French government nor any private French interests had the dollars with which to buy it.

Representatives of Surplus Property Administration questioned witnesses to bring out points, apparently, which will be covered in a report now in course of preparation, but it was learned from outside sources that the Department of Justice would make no further reports, in the belief that it should not tie its hands by recommending any specific course of action, but would review all sales.

It was apparent that the fight would be a free-for-all, with the oil industry seeing no economic postwar use for the Big Inch lines as oil carriers, the natural gas industry interested in at least one of them as a gas carrier, and the coal industry and railroads opposed, while the Reconstruction Finance Corporation apparently is less concerned with the effect of disposals on the competitive situation that in realizing the maximum cash return.

RFC Position

The RFC position was indicated by S. H. Husbands, member of the board, who pointed out that it frequently happens that when a plant is sold or leased it results in the abandonment of some other plant.

The industry witnesses were introduced by Jones acting as chairman of the industry committee.

He told the Senate group that the production and transportation facilities built by the government should be considered as expendable as any other military equipment or munitions, and warned that the disposal of surplus goods and plant must be conducted in such a way as not to wreck industry, either by giving any interests unearned advantages or by creating monopolies.

Threat to Prosperity

"The matters which we desire to discuss with you are most important to the immediate postwar economy of this country," Jones said. "Tremendous government-owned surpluses of materials and manufactured articles have been created as a result of cessation of hostilities. Unless intelligently and promptly handled, these surpluses will constitute a serious and continuing threat to postwar expansion and will have a terrific and detrimental impact on our economy. In addition, the government will own $20 billion worth of plants and equipment. Upon the determination of what shall be done with these vast productive facilities may rest the future form of America's political and economic structures."

Jones urged that Congress maintain surveillance over the activities of the disposal agencies to insure against mistakes which would endanger industry, holding that only in this way will it be possible to engender a feeling of confidence throughout the country and spur industry to go ahead with plans for postwar expansion.

The views of the industry with respect to the disposal of surplus oil facilities were presented by Jones in the form of a seven-point policy, as follows:

"(1) The government should not attempt to operate surplus plants, pipe lines or other similar facilities. The oil industry believes in the free enterprise system and believes that there is no place in such a system for government in business. There is no halfway measure—free enterprise cannot endure with government as a competitor.

"(2) As soon as possible those facilities which are commercially and economically usable in normal peacetime operations should be sold and the gov-

ernment's investment in them liquidated. Generally speaking, we are opposed to long term leases of plants by the government to private operators since such leases would in effect continue the government in business.

Scrapping Not Favored

"(3) Those facilities which are not commercially usable should be closed up and adequately protected so that they would be immediately available in the event of another emergency. Except in unusual instances, we do not favor scrapping anything which may serve this country in time of need. We believe our chances of maintaining peace are directly in proportion to our ability to protect ourselves against warlike tendencies of other nations. The government can well afford to make such expenditures as are necessary to maintain in working order war plants and other facilities in the same manner as it maintains its Army and Navy.

"(4) Sale of surplus facilities should be handled in such a manner as not to disrupt the normal functionings of the industry. If by placing government-owned properties in private hands, existing industry facilities would be displaced and abandoned, we feel it would be better for the economy of the country for the government to hold such facilities in idle reserve.

"(5) Facilities should not be sold on a basis which would give purchasers unfair competitive advantages. The government is in a very disadvantageous trading position in selling a surplus plant adjacent to a private plant and of use only to the operator of the private plant. Rather than demoralize the industry's operations by selling at less than the value to the purchasers, thereby vesting in such purchaser a competitive advantage, the government, in the general welfare, could better spend additional sums for holding such properties inactive until needed.

"(6) Believing as we do that competition is the life blood of free enterprise, no sales should be made which tend to create monopolies. For example, if utilized at all for oil transportation, government pipe lines must operate as common carriers, available to all independents as well as to the major companies.

"Expendables"

"(7) Finally, in the discussion of policy, it should be kept in mind that for the most part these government-built plants and facilities have served their purpose. They are, in a sense, expendables. Other implements of warfare on battlefronts and in storerooms became obsolete on Armistice Day. War is waste. We disregard this in the heat of conflict. Being human, when the ordeal is over and the danger passed, we try to salvage, to reclaim waste. This is right and proper, but perspective should be preserved. We should not lose sight of the larger peacetime objective, a greater national income, productive work for anyone who wants it, the nation's solvency preserved. It is possible that after spending 300 billions to insure free enterprise, we may, in an effort to save a few millions at the spigot, lose the greater objective."

The first facilities specifically dealt with were the refineries for gasoline, toluene and rubber, with varying points of view presented by Hines H. Baker, executive vice president of Humble Oil & Refining Company, as chairman of the industry subcommittee; G. L. Rowsey, president of the Taylor Refining Company, and member of the subcommittee, and M. H. Robineau of Frontier Refining Company, on behalf of a group of independents who have operated government plants.

Would Avoid Disturbance

Baker laid down a program calling for the disposition of the facilities in such a manner as to avoid serious disturbances to competitive investments of private interprise, with no purchaser or leasee receiving preferential treatment. Existing purchase option contracts should be respected, but, subject to the terms of existing contracts, the government should divest itself of ownership of all types of refining and related facilities as soon as practicable.

The plants, Baker maintained, should be sold at a price that is fair to the government but will not give the purchaser undue advantage over the large number of small operators who do not have such modern facilities located adjacent to their plants and who might be forced to build such facilities in order to compete in peacetime operations.

Rowsey recommended that no facilities be leased for longer than the period of negotiation or the option period fixed by the contracts and should be sold on the basis of postwar replacement cost less reasonable depreciation from the date of completion to the date of sale, with a down payment of not less than 25 percent and deferred payments extending over a period of not more than five years.

He held that any government facilities that cannot or will not be used in place by operations should be dismantled and sold for cash with a provision that they may not be purchased by a third party for resale to the original operator for use in place.

The independents' position, Robineau testified, is that the plants should be sold at a fair, competitive price to independent operators who would use them and not shut them down for stand-by or other purposes.

In a review of the several government-owned pipe lines, the industry committee outlined their construction and possible postwar use, if any, and suggested the disposition to be made of each.

It was pointed out that the Big Inch lines never were intended to fit into a peacetime economy because ample and efficient tanker, pipe line and other industry-owned transportation facilities will be available. The extreme size and capacity of the lines would make difficult the procurement of a steady supply sufficient to keep them operating at efficient levels, it was said.

It was recommended that the lines should not be scrapped, because of their military value, nor utilized for the transportation of crude oil or refined products, but it was pointed out that if certain conditions are met it would be feasible to convert them to natural gas service.

Other Lines

Recommendations on the other lines were as follows:

Southwest Emergency Pipe Line: This line should be sold to the highest bidder.

Plantation pipe line extension: This line cannot compete with deliveries by tanker and there is no military necessity to keep it intact. The line and auxiliary equipment should be sold for possible re-use in some other location.

Florida emergency pipe line: This was strictly a war facility and should be sold for salvage.

Ohio Emergency Pipe Line: This line has served its purpose and returned the major part of its costs; if a purchaser cannot be found at a price satisfactory to the government, the line should be abandoned and salvaged.

The report also recommended that the government sell all tow boats, tugs and barges as soon as practicable to private contractor common carriers at prices which take into account excess costs of wartime construction as compared with postwar construction costs and depreciation.

Tank trucks owned by the government should be sold to the present carriers on their defense plant corporation contracts.

Tankers' Fate

Views with respect to tankers were submitted for the committee by C. P. Kunze of Socony-Vacuum Oil Company and T. E. Buchanon of The Texas Company.

Both agreed that the joint staffs of the Army and Navy should determine the size of the tanker fleet required by the government for national defense and security. In making this determination they should take into account the number of vessels which will be maintained by American operators for commercial purposes which in times of emergency may be made readily available as a naval and military auxiliary, and that American citizens should be offered the first opportunity to purchase surplus tankers for domestic purposes.

Kunze recommended that any remaining surplus tankers should be offered to American citizens, non-citizens and foreign governments for use at a price equal to 60 percent of prewar domestic cost of construction, less normal and accelerated depreciation.

Kunze also recommended that the military authorities should determine what number of tankers not disposed of should be placed in a reserve to be maintained for use only in an emergency and not for commercial operation, and that after a period of not more than two years the then-remaining surplus tankers, other than the reserve, be scrapped rather than continued in lay-up.

Louisiana Charged at FPC Hearing With "Changing Its Mind in Midstream"

A charge that Louisiana "changed its mind in midstream" about seeking prohibition of all gas exports from the state marked the FPC hearing on natural gas at New Orleans last week.

C. H. Lyons, Shreveport, independent oil and gas producer, said he had been informed before the hearing that the state planned to seek an absolute ban, but he recognized that this was not the official Louisiana position at the hearing.

Observers believed the hearings, which began November 12, might go through this week.

Still scheduled to appear are Fred A. Earhart, New Orleans public utilities commissioner; Major Thomas H. Allen, president of the light, gas and water division of Memphis; and Governor Ben Laney of Arkansas, who heads a group of Arkansas witnesses.

Lyons declared denial of Louisiana gas to other states would lead to retaliation, end drilling within the state and destroy free trade. He read a resolution by the executive committee of the Mid-Continent Oil and Gas Association, Louisiana-Arkansas Division, asking Louisiana and other producing states to resist efforts by federal agencies to assume jurisdiction over conservation of gas, production, gathering, end uses or sale except in interstate commerce by pipe lines.

P. A. Frye, Louisiana executive director of natural gas conservation, testified the state hoped to prevent increased exports through "presently existing pipe lines, especially those going to other sources of fuel."

Governor James H. Davis of Louisiana keynoted the state's stand on the issue with:

"We have no objection to sharing to a reasonable extent our gas with Arkansas and Mississippi, for instance, whose requirements are far in excess of their production nor with other states which have no mineral fuel energy resources of their own or within reasonable proximity."

The objection, he said, is in pouring great supplies of "Louisiana's only fuel resources beside pine knots" into states which have "almost limitless reserves of coal and many of which are producers, as well, of natural gas and petroleum."

Allen Shotwell, counsel for the Natural Gas Industry Committee, asked whether Governor Davis believed the FPC should fix the price and control the production and gathering of gas in Louisiana. The Governor replied that he could only answer that he wanted the state to have the use of its gas and a better price for it.

Also answering Shotwell, the Governor said he does not feel that gas should be used even for domestic purposes in parts of the country where other fuels are available, but that burning natural gas in boilers in Louisiana was not, in his opinion, an "inferior" use because there is no other fuel available in the state.

Joseph L. McHugh, state commissioner of conservation, said the conservation problem with respect to casinghead gas in Louisiana rises primarily because of the price at the wellhead being too low. He said that proration of gas in all the fields of the state would be helpful, as would a uniform price for each reservoir and a higher wellhead price.

Paul Montgomery, gas engineer for the director of national gas conservation, estimated that the state's gas reserves amount to 15,905 trillion cubic feet. He also said there is approximately 1.2 trillion cubic feet of casinghead gas in the state.

H. W. Bell, engineer and geologist for the state director of natural gas conservation estimated the remaining life of the Monroe field at 2 trillion cubic feet—a life of eight years at present rates of production.

Bell also lauched into one of Louisiana's principal arguments in presenting its case for curtailing of gas exports, the use of natural gas as a preferred raw material for chemical conversion to fairly high priced products. He declared that the national trend was toward this and mentioned specifically a process to manufacture motor fuel from natural gas.

Opposite viewpoints were emphasized as Representative Charles E. MacKenzie, Fifth Congressional District, condemned the state proposal to control gas exports and Former Governor Sam Jones declared that the FPC "has it within its power" to remedy the asserted depletion of Louisiana resources.

Jones said the effect of the early exhaustion of Louisiana natural gas would, in his opinion, be catastrophic. He said, "it would remove the only known source of fuel or energy indigenous to the state. It would deprive us of a motive or lifting power that would leave unrecovered in the underground reservoirs of the earth mammouth quantities of oil worth untold millions of dollars."

Contrary to popular conception, he said, the position taken by Louisiana is not founded on state lines.

"Louisiana says the industrial fuel supplies of all regions should be considered and an effort should be made to provide for all the regions an ample economic supply of fuel for the future," he said. "This fuel, or energy, may take the form of coal, or hydro-electric power, or fuel oil, or natural gas. If an area is already supplied with sufficient quantities of industrial fuel, then it should not be permitted to take from areas that do not have such supplies.

"It doesn't make sense—and argument till doom's day will not cause it to make sense—that areas favored with 3000 years' supply of coal should take from areas having, at most optimistic estimates, 35 years' supply of natural gas."

Davies Denies "Fast One" Pulled in Anglo-U. S. Pact

Charges that the American delegation negotiating the Anglo-American Petroleum Agreement put over a "fast one" in designating the specific British territories to which the pact should apply and omitting Burma and Kuwait were categorically denied November 16 by Deputy Administrator Davies.

In a formal statement designed "to correct certain misconceptions that have arisen" regarding the change, Davies said the form in which the treaty went to the Senate "is the exact wording desired by the American delegation and is the exact wording that was seen and approved in London by our six industry consultants.

Exact Wording

"It is the exact wording of the treaty signed by the American and British delegations," Davies declared. "It is the exact wording of the treaty given to the President and by him submitted to the United States Senate for its advice and consent to ratification if it approves.

"It is true that in an earlier draft of the treaty the first paragraph of the article in question read: 'All British colonies,' etc., and that this was changed to read: 'Those British colonies,' etc., but the important fact is that this change was made during the negotiations leading to the final draft which was signed.

"The purely grammatical change from 'all' to 'those' was made to express even more clearly the agreement that, for the purpose of the treaty, no territory would be considered as including a part of either country unless it appeared in the lists. The change was made with the full knowledge and endorsement of the six industry consultants.

Transmission Error

"Unfortunately, in cabling the text of the treaty to Washington so that the American press might have it at the same time as the British, the secretary of the American delegation transmitted a draft in which the change from 'all' to 'those' had not been made.

"The error was not discovered until it was brought out publicly in an effort to show that a sly attempt had been made to 'slip one over' on the industry. Obviously, as some of the consultants have pointed out publicly, there was no such attempt."

INGA Membership Meeting Is Slated for January 28

Because the Federal Power Commission again changed the time and place for its Texas hearing in the natural gas investigation, the Independent Natural Gas Association of America has found it necessary to revise its plan concerning the association's annual membership meeting.

The association now will hold its meeting at Houston on January 28, the same date as the FPC hearing.

Resignations of 24 PAW Officials Since September 30 Announced by Davies

Resignations of 24 officials who have left PAW since September 30 were announced November 15 by Deputy Administrator Davies with an expression of his appreciation of their loyalty and service.

"The ending of the war emergency makes it possible to release these men who have given unselfishly of their time and energy to perform one of the outstanding tasks of the war," Davies said.

"Without the service of these officials loaned by the oil industry for the war period, PAW could not have carried out its assignment to provide the oil so vital to victory. Each one of these men may return to private industry with the inner satisfaction that can only come from successful accomplishment of a great public service."

Resigning Officials

The resignations listed by Davies included the following:

William K. McCoy, director of the Facilities security Division, came to PAW in September, 1942, from the Gulf Oil Corporation.

James E. Pew, director of the Natural Gas and Natural Gasoline Division, has been with PAW since January, 1942, coming from the Virginia Gasoline and Oil Company, Charleston West Virginia.

Howard W. Page, director of the Program Division, formerly of Standard Oil Company of New Jersey, has been with PAW since December, 1942.

Roy F. Hawkins, director of the Foreign Supply and Distribution Division, has been with PAW since March, 1945. He was formerly manager in Genoa, Italy, for Standard Oil Company of New Jersey and served as executive secretary of the Petroleum Supply Committee for Latin America before his appointment to his PAW post.

WPB Veteran

William H. Newman, executive officer and assistant to the deputy administrator, came to PAW in November, 1943, from the War Production Board. He also served with the Office of Price Administration. Before the war he was assistant professor of industry at the University of Pennsylvania.

George A. Wilson, director of the Supply and Transportation Division, came to PAW in April, 1942, from the Standard Oil Company of Louisiana. George Gibson, director of the Construction Division, came to PAW from the Hancock Oil Company, Long Beach, California, in September, 1941.

Bonner H. Barnes, assistant director of the Refining Division, formerly with Gulf Oil Corporation, has been with PAW since February, 1945.

George E. Dewey, manpower counselor, was with Standard Oil Company of Indiana before coming to PAW in October, 1942.

Charles E. Webber, assistant director of the Natural Gas and Natural Gasoline Division, came to PAW in June, 1942, from Humble Oil & Refining Company.

Returns to Gulf

Lucien F. Craig, assistant director of the Supply and Transportation Division, has been with PAW since March, 1943, except for a year during which he returned to his former company, Gulf Oil Corporation.

William C. Frysinger, assistant director of the Foreign Supply and Distribution Division, came to PAW in February, 1943, from The Atlantic Refining Company.

John Kurtz, assistant director of the Foreign Supply and Distribution Division, came to PAW from The Atlantic Refining Company in August, 1941.

Martin J. Gavin, assistant director of the Foreign Refining Division, was with the Foster Wheeler Corporation, Los Angeles, before coming to PAW in October, 1942.

W. Page Keeton, assistant chief counsel, came to PAW in March, 1945, from the Office of Price Administration. He was formerly assistant dean of the University of Texas law school.

James G. Detweiler, assistant director of the Foreign Refining Division, was with The Texas Company before he came to PAW in March, 1944.

Edward R. Thatcher, assistant director of the Materials Division, came to PAW in March, 1945, from the Standard Oil Company of California.

Leo F. Connell, assistant director of the Materials Division, came to PAW in February, 1942, from Sun Oil Company.

William H. Collins, assistant director of the Materials Division, was with the Arrow Drilling Company, Tulsa, before coming to PAW in October, 1942.

Charles B. Gale, special assistant to the director of the Refining Division, came to PAW in July, 1942, from the Pan American Petroleum Refining Corporation.

Ivan G. Harmon, special assistant to the director of the Materials Division, came to PAW from the Office of Production Management in February, 1942. He was formerly with the Maryland Oil Company.

Charles H. Wager, assistant director of Supply and Transportation Division, was with Shell Oil Company before coming to PAW in December, 1943.

William M. Averill, district director in charge at Houston (PAW District 3) was an independent oil producer of Corpus Christi, Texas, before he came to PAW in May, 1942.

Herbert R. Gallagher, district director in charge at Los Angeles, (PAW District 5), formerly was president of the Consolidated Oil Company of New York. He has been with PAW since January, 1943.

Final Controls on Movement Of Oil to Be Eliminated

Final orders controlling the movement of oil will be eliminated November 30 with the revocation of PAW Directives 63 and 73, it was announced November 14 by Deputy Administrator Davies.

The two orders enabled PAW to call upon oil companies to provide an adequate supply of oil and products for the Big Inch and Little Big Inch pipe lines.

"With the revocation of the directives," Davies pointed out, "the companies which supplied the pipe lines are free to move their oil as they see fit, in accordance with the normal practices of peacetime."

Pollution Dilemmas Arise At House Group Hearing

The House Rivers and Harbors Committee last week opened hearings on legislation providing a $1,600,000,000 federal-aid stream-pollution control program, immediately to face the hard fact that at least two important industries have so far been unable to develop economic methods of treating their waste.

The two industries were synthetic rubber manufacture and TNT production. John K. Hoskins, chief of the division of sanitary engineering of the Public Health Service, told the committee that no feasible method of treating synthetic-rubber waste has been developed, and that treatment of TNT waste is "very difficult."

Hoskins named as the major source of stream pollution the abandoned coal mines from which contaminated waters flow. He did not charge that waste from oil refineries was a problem, but pointed out that some years ago the Department of Commerce set up regulations relating to the distance from shore within which the dumping or cleaning of oil bunkers was prohibited, drawing from Representative Mansfield of Texas the comment that the law did not seem to be enforced very well along the Texas Gulf Coast.

Sidney Latham Named Texas Compact Representative

Sidney Latham, Dallas attorney in the employ of Hunt Oil Company, has been named Texas representative to the Interstate Oil Compact Commission. Latham will succeed Judge J. C. Hunter, who held the post during the past four years.

Latham first came into the oil picture in 1933, when, as a representative from Longview, Texas, he was chairman of a house committee which investigated hot oil in the East Texas field. At this session also, he assisted in passing a conservation law containing important changes.

More recently Latham was Secretary of State for Texas, but at the last session of the Legislature, the Senate refused to confirm him.

Allowable of 2,029,706 Barrels for December Is Set by Texas Rail Group

The Texas Railroad Commission last week set December allowables at 2,029,706 barrels daily. This does not include unprorated distillate and natural gasoline, which amounts to 163,000 barrels more daily. The new crude allowable is 3134 barrels higher than the allowable in effect November 10.

Fields generally will be allowed to produce 25 days, one day more than in November. The East Texas field is to continue producing 20 days and the Panhandle field is exempt from shutdown. Because December includes one more day than November, the fractions are smaller and consequently, total allowables for the month are increased slightly.

The commission was evidently unimpressed by requests for more oil, which were received at the statewide hearing November 14. Nominations by purchasers totaled 2,200,596 barrels, which was 97,419 barrels higher than November nominations.

At the hearing the commission heard requests for increases from many particular fields. Humble Oil & Refining Company asked for 38,000 barrels more in December, all of it sweet crude, distributed among the various fields in which the company produces and purchases.

There were no requests for reductions.

It was reported that the average pressure in the East Texas field had risen 9.55 pounds during the two months ending November 1. With only 20 producing days in December, which cut the allowable 9706 barrels daily, the rise in pressure should continue. This mode of operation was endorsed by producers. Commission members referred frequently to the storage decline, which appeared general throughout the state.

Tidelands and Teapot Dome Similarity Charge Denied

Efforts of the St. Louis Post-Dispatch, which uncovered the Teapot Dome scandal, to develop the tidelands situation as a similar olfactory offense, brought last week from Edwin A. Pauley, California oil operator and United States Commissioner on the Allied Reparations Commission, a flat denial that he had ever intervened in either the legislation before Congress or the Administration's preparation of the suit now pending in the Supreme Court.

Inferences that there is a similarity between this situation and Teapot Dome are "completely unjustified and wholly unsupported by the facts," and statements that he requested President Roosevelt to have former Attorney General Francis Biddle delay "any action of any kind whatever on tidelands matters" are untrue, Pauley declared in a formal statement.

"I have never asked any Senator or Representative to vote in favor of or against any bill involving tidelands rights or any other matter related thereto," he asserted. "I never at any time requested President Roosevelt nor Attorney General Biddle to delay, postpone, or withdraw any suit relating in any way to the tidelands."

"I have publicly, privately and repeatedly stated it to be my firm conviction that ownership in the tidelands rests with the states, an opinion confirmed by the United States Supreme Court in 52 separate decisions and held by Secretary of the Interior Ickes on numerous occasions between 1933 and 1936," Pauley added.

100,000 Organizations Found to Be Tax-Exempt

More than 100,000 organizations of various types have been found by the Treasury Department to be exempt from federal taxes, including approximately 6000 farmers' cooperative marketing and purchasing organizations, it was disclosed November 16 by Secretary Fred M. Vinson.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Nov. 17	Nov. 10
Alabama	500	150
Arkansas	75,850	75,100
California	836,800	832,400
Colorado	20,950	20,200
Florida	150	100
Illinois	204,100	206,300
Indiana	13,650	13,500
Kansas	267,350	243,800
Kentucky	28,750	29,650
Louisiana	367,700	367,100
North Louisiana	74,100	73,500
South Louisiana	293,600	293,600
Michigan	46,950	45,900
Mississippi	54,150	53,500
Missouri	100	100
Montana	19,900	19,750
Nebraska	750	800
New Mexico	94,200	94,200
New York	13,700	13,950
Ohio	7,250	7,600
Oklahoma	388,700	390,150
Pennsylvania	32,800	37,150
Tennessee	35	35
Texas	1,892,950	1,892,950
Upper Gulf Coast	464,350	464,350
East Texas Field	316,000	316,000
Rest of Eastern Texas	127,500	127,500
Southwest Texas	300,250	300,250
West Texas	456,650	456,650
North Texas	147,250	147,250
Panhandle	80,950	80,950
West Virginia	7,700	7,600
Wyoming	96,100	97,100
Total United States	4,471,085	4,449,085

Texas Rail Commission Recesses Hearing in Heyser Gas Case

The Texas Railroad Commission hearing on alleged gas waste in the Heyser field, set for November 14, was recessed until December 18, in a surprise move.

Discovery that waste was going on at Heyser apparently resulted from the investigation of an industries gas committee appointed by the Commission last December. A stipulation of this appointment was that data compiled and conclusions reached would be applied generally and not used to condemn any operator or particular field.

When the hearing was called last week, Rex Baker, appearing for Humble Oil & Refining Company, declared the problem is statewide and asked for delay until a committee of operators could study the field.

The Heyser problem is this: There is a gasoline plant in the field through which all gas is not processed. There are many high ratio wells; some gas is vented at the separator and much of this residue is burned. It is to conserve this gas that the Commission moved.

Another unique feature of the hearing was the appointment by the Commission of an industry committee of engineers who are to investigate conditions in the field and report their conclusions and recommendations when the hearing resumes on December 18.

14-Man Equipment Advisory Council Is Chosen by OPA

Appointment of a 14-man Oilfield Drilling and Producing Equipment Industry Advisory Council, to consult with OPA officials on pricing in that field, was announced by the Office of Price Administration November 14. The first meeting of the committee, for organization purposes, will be held December 4.

Members of the committee will include: Hugh H. Glen, president, Emsco Derrick and Equipment Company, Los Angeles; H. W. Cardwell, president, Cardwell Manufacturing Company, Wichita, Kansas; W. Sievers, vice president, Security Engineering Company, Whittier, California; J. H. Wilson, president, Wilson Manufacturing Company, Wichita Falls, Texas; A. M. McKinney, president, National Supply Company, Toledo; F. J. Spang, president, Spang and Company, Butler, Pennsylvania; Rodney S. Durkee, president, Lane-Wells Company, Los Angeles; Dow D. Warren, assistant to the president, Reed Roller Bit Company, Houston; T. Sutter, vice president, Baker Oil Tools, Inc., Huntington Park, California; H. D. McLean, assistant to the president, J. B. Beaird Company, Shreveport, Louisiana; R. M. Vickers, president, Hydraulic Pump Company, Smackover, Arkansas; George C. Alten, president, Alten's Foundry and Machine Works, Lancaster, Ohio; W. B. Sharp, Mission Manufacturing Company, Houston, and Karl L. Elliott, treasurer, Acme Fishing Tool Company, Parkersburg, West Virginia.

Administration's Labor Policies Get Sharp Rap from Brookings Institution

Administration labor policies were sharply rapped last week by the Brookings Institution, reporting the results of a study conducted by Dr. Harold Metz under a grant from the Falk Foundation.

The report pointed out that there is no unified structure of policy guiding the government's effort to improve the economic position of workers, and that some lines of action are inconsistent with others. As a result, only by a comprehensive analysis of the actual administration of the various labor laws can the "substance" of policy be ascertained.

The major objectives of government labor policies are to increase earnings and reduce hours of work, through increasing the bargaining power of workers, protecting workers' rights of self-organization and facilitating the peaceful settlement of labor disputes.

Minority Weapon

"To increase the bargaining power of employes, the government has protected their right to organize, strike, picket, boycott and bargain collectively, with very few limitations on these activities even though interstate commerce is thereby impeded," the institution reported. "Even minority groups of workers can utilize these weapons against the interests of majority groups.

"The purpose of the policy of protecting the right to engage in concerted action is to encourage the making of collective agreements, yet little is done to insure that these agreements are binding and enforceable," it charged. "Even though an agreement contains a no-strike provision, workers are not prevented from using strikes or boycotts in violation of it."

The report charged further that the federal labor laws, as administered, favor large bargaining units represented by unions affiliated with national organizations.

"Legally," it said, "employes have the right to form their own labor organization. But before deciding which group represents the majority in a collective bargaining unit, the government must determine what constitutes an appropriate unit. The nature of the unit, however, is a significant factor in determining what organization will be chosen as representative of a majority; consequently the government agencies that perform these functions inevitably interfere with the free right of workers to choose their own form of organization.

Infringement of Rights

"Vesting of the exclusive bargaining right in the representatives of the majority, as is required by law, increases the bargaining power of the majority and trenches upon the rights of minorities. Likewise, the government's approval of closed-shop, union-shop and maintenance-of-membership clauses in collective agreements runs contrary to the individual worker's legal right to organize or not to organize.

"In its efforts to facilitate the peaceful settlement of disputes, the government has set up various types of machinery for mediation, investigation and arbitration. In nearly all instances, labor has the right to use or reject this machinery, but in no case is labor's right to strike really limited or restricted in order to encourage its use. Furthermore, the possibility that labor may strike as an alternative to accepting the terms developed is a significant element in shaping the settlement."

W. F. Clinger Again Heads Penn Grade Association

W. F. Clinger of Warren, Pennsylvania, was elected president of the Pennsylvania Grade Crude Oil Association by directors meeting at Oil City, Pennsylvania, November 8. He succeeds D. T. Andrus of Bradford, who has been president since June, 1943.

W. F. Clinger

B. T. Haskins of Wellsville, New York, was elected first vice president, succeeding A. C. Simmons of Bradford, and D. T. Ring of Columbus, Ohio, was reelected second vice president.

The election returned Clinger to the leadership of the Penn Grade Association which he had headed as president from 1937 to 1940.

The directors endorsed the Anglo-American petroleum agreement and urged its ratification by the Senate.

New Chart of Wind River Basin, Wyoming, Is Issued

A new chart of the Wind River basin of central Wyoming, showing the stratigraphic relations of the redbeds formations, has been issued by the Geological Survey.

Not of themselves important as oil-producing zones in central Wyoming, although a few sandstones have yielded small quantities of black oil in some areas, the redbeds are penetrated by drilling for deeper oil-producing zones, the survey said, and knowledge of their extent, characteristics and thickness is important for the proper correlation of formations encountered in drilling.

Copies of the map, designated as Preliminary Chart 17 of the Oil and Gas Investigations series, may be purchased at 40 cents each from the survey offices in Washington, Casper, Wyoming; Denver and Tulsa, Oklahoma.

Good Oil Showings From Four Sands Reported in Navy's Alaskan Project

Good showings of oil from four separate sands were reported by the Navy last week in Umiat 1, the exploratory well being drilled on U. S. Navy petroleum reserve No. 4 in Alaska.

Cores that bled oil were recovered from approximately 200 feet, 500 feet, 1300 feet and 1350 feet. Sand sections of the first three shows were about ten fee thick, and the fourth considerably thicker. None of the sands would produce on a drill-stem test, and the oil samples recovered contained no gas. Cores were a hard, gray sand, tightly packed, of apparently good permeability. The last sand section had some shale streaks. Gravity of the oil ranges from 35 to 40 and the color is a clear brown.

Low Viscosity

The samples tested low in viscosity, indicating the oil if found in producible quantities could be successfully moved through a pipe line in the low temperatures common to the area. The amount of oil in the cores and the electrical log indicated that the well might make a pumper at the present state of development but since plans call for exploration to further depths, no attempts have been made to pump the well. Total depth of the hole is 1816 feet, bottomed in hard sandstone. The well is now shut down due to the water supply having been cut off by the winter season. By early October all available water was frozen solid and operations had to be suspended. Drilling machinery and other equipment have been winterized and protected so that drilling can be resumed as soon as Arctic weather permits, which will be about June, 1946.

Headquarters at Barrow

Headquarters of the crew and personnel in charge of the operation are at Barrow, about two miles from the village of Point Barrow, the northernmost village of the North American continent. Since early October, the temperature at Barrow has been below zero, and at the time the camp was visited, was 13 below. Umiat, the site of the well, is 182 miles southeast from Barrow in the extreme southeastern corner of the reserve. Equipment is on hand at Barrow to take up work next year. The project is being carried on by Seabees under direction of the Navy.

Shield Heads Texas Oil, Gas Group; Suman Sees Bright Industry Future

Fred W. Shield, San Antonio independent producer, was elected president of the Texas Mid-Continent Oil & Gas Association at the annual meeting of the board of directors in Fort Worth November 9. He succeeds Maston Nixon of Southern Minerals Corporation, Corpus Christi, who had served two terms. George C. Gibbons, executive vice president, and Eugene McElvaney, treasurer, both of Dallas, were reelected.

Fred W. Shield

The directors of the association gave their support to the resolution recently adopted by the Petroleum Industry War Council advocating the immediate removal of price ceilings on crude and petroleum products as well as other federal restrictions continued after the passing of the wartime emergency. The directors also went on record as favoring the 16-point program recommended by Governor Coke Stevenson's special state gas committee, which has demanded the continuation of state jurisdiction in the production and enforcement of conservation of oil and gas. Recent and pending investigations by the Federal Power Commission of the natural gas industry have been termed by producers as a move towards federal regulation of oil and gas production and sales.

Bright Outlook

A bright outlook for the domestic oil industry during the next 20 years was forecast by John R. Suman, vice president of Standard Oil Company (New Jersey) and a former official of the Humble Oil & Refining Company. He said the daily consumption and exports of crude would require 4,728,000 barrels in 1946 with a gradual rise to 5,762,000 barrels during the 1961-65 period. This will require approximately 30 billion barrels, while new discoveries during this period must average about 1½ billion barrels annually to maintain the nation's backlog of reserves at the prevailing level of 21 billion barrels. A deficit of 500,000 barrels of heavy oil in 1946 will progressively increase towards the end of the 20-year period to 824,000 barrels daily, thereby making it necessary that a supplemental supply from other nations be imported to fill the fuel requirements of industrial plants, railroads, naval craft and merchant and passenger ships.

J. C. Hunter of Abilene, member of the firm of Hunter & Hunter and an active leader in the Mid-Continent Association and the Texas division, was selected from the ranks of the independents to receive the annual distinguished service award. The presentation was made by Wallace Hawkins, general counsel for Magnolia Petroleum Company, Dallas, by proxy to Charles F. Roeser.

New Board Members

Joe H. Russell, vice president of Gulf Oil Corporation, Houston, was similarly honored for his long years of service to the industry as a major company employe and executive. The engraved plaque was presented by George A. Hill, Jr., president of Houston Oil Company.

The eight retiring vice presidents and directors were reelected by the association. New additions to the board included: M. D. Bryant, San Angelo; Frank Carpenter, Sour Lake; Robert Carr, San Angelo; Porter Dunn, Dallas; Fred H. Fues, Chicago Corporation, Corpus Christi; Lester Grant, Midland; Arthur Harvey, Tex Harvey Oil Company, Dallas; A. N. Hendrickson, Midland; Floyd L. Karston, Wirt Franklin Petroleum Company, Houston; Paul Kayser, Gulf States Oil Company, Houston; Ratcliff Killam, Laredo; C. V. Lyman, Midland; Glenn H. McCarthy, Houston; F. W. Mayer, Continental Supply Company, Dallas; Scott Myers, Beaumont; C. L. O'Brien, Amarillo; W. L. Pickens, Dallas; J. Harry Reynolds, Hickok & Reynolds, Inc., Cisco; C. R. Rider, Dallas; J. V. Vandengerge, Jr., Victoria; Claude Voyles, Austin; John W. Thomas, Deep Oil Development Company, Wichita Falls; R. H. Welder, Sinton; Cap Yates, Fort Stockton; and Joe Zeppa, Delta Drilling Company, Tyler.

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Judge Hunter Succumbs as Oil Men Wait to Honor Him

Jesse Coleman Hunter, 55, president of the Mid-Continent Oil & Gas Association, died in Altoona, Pennsylvania, November 11, where he was striken with a heart ailment while en route to Fort Worth, Texas, to receive one of the two annual awards made to Texas oil men for outstanding achievement in the oil industry.

Jesse Coleman Hunter

The awards are made at the annual meeting of the Texas Mid-Continent Oil & Gas Association.

Prominent in Texas banking circles, Hunter served for ten years as county judge of Culberson County and 11 years as county treasurer. He also was director of the Van Horn State Bank and had ranching interests near Abilene.

He was organizer and former president of the West Central Texas Oil & Gas Association, Texas representative on the Interstate Oil Compact Commission, co-chairman of the General Depletion Committee for the petroleum industry, charter member of the Petroleum Industry Council for National Defense which subsequently became the Petroleum Industry War Council, director of the Independent Petroleum Association of America, partner in the Grisham-Hunter Corporation, director and member of the executive committee of the American Petroleum Institute, president of the Abilene Chamber of Commerce, director of the Abilene Citizens National Bank, and chairman of the board of Hardin-Simmons University.

Judge Hunter's career was closely knitted with the development of oil throughout the United States, and particularly in the Southwest where he lived. He was one of the strongest advocates of conservation of the oil and gas resources of the nation.

Colombia Strike Threatens As Labor Row Continues

The next few days will show whether serious labor difficulties in Colombia will arise from present problems. The federation of labor syndicates recently formed to unify the various labor groups had set a deadline of November 16 by which time the oil companies were to meet with them for discussion of federation demands.

The companies are now operating under contract and agreements still in force and have thus far shown no inclination for a formal conference. In presenting the list of demands the federation implied it would consider a general strike if no attention was given its demands by November 16.

Demands were by no means conservative and at the time of presentation the federation denounced the agreements and contracts. It now remains for the minister of labor to rule on the validity of the denouncement.

Among new demands was a provision for a complete closed shop system with wage increases which would result in boosts ranging from 10 to 65 percent over the present scale. Demands included free housing for workers and a system entitling workers to pensions after 15 or 20 years of service, regardless of age.

During the latter part of the week various token walkouts were staged by several local unions in scattered sections, perhaps to show the companies that the federation will strike if demands are not met. The work stoppages were for periods of only two or three hours at a time, and hit pipe line and terminal work as well as field and refinery activity. None has interfered with output so far. All were staged within a period of three days and have not been repeated.

National Oil Policy Urged

Industry Praised By Sec. Ickes for War Contribution

FORMULATION of a national oil policy, continued cooperative effort to assure ample military oil supplies, preservation of free enterprise, better public relations, the influence of atomic energy on petroleum, and unstinting praise for the industry's war contributions were stressed by the several speakers who appeared before the three general sessions of the Twenty-Fifth Annual Meeting of the American Petroleum Institute in Chicago.

Registration was considerably higher than pre-convention estimates, totaling about 2700, which is equivalent to a normal annual meeting.

Secretary of the Interior Harold L. Ickes, who also is Petroleum Administrator for War, told the API delegates that the oil industry had kept faith with America.

Ickes Reviews Pact

Ickes reviewed the Anglo-American petroleum pact, thought its ratification by the United States Senate would be a step in the right direction, and then outlined his idea of what America's oil policy should be.

"In any consideration of what a national policy should be," Ickes said, "we begin with the question: what do we want to accomplish? Well, so far as oil is concerned, I think that we all can agree that there are at least two ends that we wish to gain.

"First, we want to assure ourselves of ample supplies so far in this future as that may be possible.

"Second, thinking in broad terms, as war has taught us to do, we want the world's oil to be utilized to further the well-being and security of all peace-loving nations. Thus we may hope to reduce the danger of another world war."

He said the minimizing of threats to the peace was a major consideration in efforts to bring about the Anglo-American petroleum agreement.

In suggesting a sound national oil policy, Ickes declared that "nobody on God's earth, be he a geologist with a seismograph or a wildcatter with a magnetic nose, can tell us, for certain, how long we will be able to supply our own domestic requirements from our own sources.

"It may be for years and it may be forever. But I don't know, and you don't know, and nobody else knows.

'Creative' Course

"Therefore, I come back to what I consider to be a safe and sane, a positive and creative course for us in these United States:

"(1). Let us do all that we can to stimulate the exploration for oil in the United States.

"(2). Let us use efficiently the oil that we have so that it may last as long as possible. Most of all let us eliminate waste.

"(3). Let us assure ourselves of access to foreign oil resources so that they may supplement our domestic supplies when, or if, they are needed."

Ickes said that it was his belief that the oil job should be done, just so far as possible, by private industry. He declared that the initiative, the resourcefulness, the vigor and the competitive zest of private industry have developed oil resources of the United States with an efficiency unmatched anywhere else in the world.

"In his activities abroad," he said, "the American oil man has operated in a manner which, with few exceptions, has promoted the interests, not only of the United States, but of the countries where he has operated.

"Therefore, I say once more, because people occasionally forget—sometimes intentionally—that I would consider it unwise and unfortunate for government to interpose itself in any phase of the oil business which can be handled by the industry efficiently and economically and with the satisfaction that a fair profit brings.

"But again I would go on record to the effect that I also consider it perfectly obvious that we need to recognize a national interest in any irreplaceable natural resource that is so extremely important as oil. This does not mean 'nationalization,' or 'government competition' or 'government domination' or any of the other well-known shibboleths. It does mean that governments and industry need to make certain that this nation will always have access, whether at home or abroad, to all of the oil that it may ever require."

Pact Reviewed

Ickes reviewed in detail some of the Articles in the Anglo-American petroleum agreement. Pointing to the preamble of the pact, he said there are no commitments, simply a joint statement of the attitude in which both sides approached the problem—an attitude "which we can all agree was both realistic and fair."

He also had praise for William R. Boyd, Jr., W. Alton Jones, George A. Hill, Jr., A. Jacobson, Joseph E. Pogue, and Ralph T. Zook, industry representatives who served as technical advisors to the United States official group to London where the pact was signed.

Ickes also commended the oil industry for keeping faith with the government in solving the many problems during the war. He cited such problems as transportation, increased output of 100-octane aviation gasoline, changing of refinery yields during the fuel oil crisis of the winter of 1942-43.

"We can look each other in the eye, unashamed, each knowing that he has kept faith with his partner," Ickes said.

"My sincere belief is that, when the historian looks at the record, he will agree that we also kept faith with America."

Cooperation Asked

PAW Deputy Administrator Ralph K. Davies' address cited the necessity of continued cooperative effort by oil companies and the need of maintaining governmental organization at an efficient peak. He reviewed activities of PAW and praised the industry for keeping its pledge "to go along the cooperative route." He read a letter signed by the top military citing that the industry provided "in full and on time" all the oil needed by the armed forces.

The same skill and intelligence that made a success of petroleum's war effort should now be applied to the industry's postwar problems, Davies declared. Competent and well organized government and industry, one complementing the other, are needed.

"If the government is to deal with the rest of the world in an effective way, it must be well prepared and this can only result in two ways—by the provision of additional qualified staff (to handle oil matters) or through reliance upon a consultative organization provided by the oil industry." He expressed his preference for the latter course "because it will be of a higher order since government is not prepared to compete with industry for personnel and, too, because that kind of arrangement best conforms to our American system of private enterprise and best insures against government encroachment."

Needed Services

Thus without suggesting the specific form, Davies urged that petroleum continue in some way those industry activities, in particular the advisory services to government, appropriate in the postwar period. He told how PIWC had "welded the many separate parts into one

At 25th API Convention

whole, gave the oil industry its advantage of functioning as an entity in its relations with the government."

He said that in ordinary times competition of many units develops new and better methods and builds competence and strength "but this does not rule out a proper common concern of the separate competing units certain interests that do not involve the competitive factor."

"Then surely," he continued, "There is nothing in the law intended to prevent the oil industry as an industry from concern over national security—the problems incident to assuring adequate oil supplies for protection of the country and to meet the industrial and civilian requirements upon which the public welfare depends. There is nothing in the law to discourage the existence of an industry body to counsel and advise with the government on oil, either upon its own motion or as the government may request such counsel and advice."

The federal government, Davies pointed out, has certain oil functions to perform and it was his idea that industry "may well concern itself with the way in which these functions are carried on."

"The industry's best chance for continued freedom consists in perfecting its prewar industry organization and as well, expressing itself energetically upon the question of suitable organization in government," he concluded.

Boyd Reviews Progress

Institute President William R. Boyd reviewed progress of the industry over the 26 years the institute has been in existence, then analyzed development of the war period as the basis for its future program from his viewpoint. He reviewed conditions under which the American Petroleum Institute was founded, telling how in 1920 and 1921, the late Tom O'Donnell, first institute president, preached only three goals—cooperation, conservation and preservation of a free economy. Only by achieving some measure of success in these three fields, he contends, could the industry be of its greatest service to humanity.

"The success of the American industry has been based on two things: First, willingness to venture and the absence of legislation forbidding them to do so; and, second, the development of skills. No industry exemplifies that better than petroleum."

"I speak of these things because most of the rest of the world while envying the industrial progress of the United States, has lost sight of the reason for it. As a result we see governmental control of industry taking hold of most of the old world.

The individual European today—given the land—the equipment and the necessary capital—would be hard put to drill an oil well. The state would not permit it. That would be a function of government, controlled by a bureau.

"The world has tried innumerable systems of government and economies throughout the centuries.

"Under none of them has the individual citizen fared so well as he has under the American system of individual freedom and individual opportunity.

Must Preserve It

"It is our solemn duty to aid in preserving that system. We are representatives of one of the major industries of this nation. If we can go forward together in a spirit of genuine cooperation that has always characterized the API, then we shall accomplish a compelling share in making a better oil industry and a better United States of the future."

Oil industry fears that atomic energy might soon displace petroleum as a source of energy were allayed by Dr. Clark Goodman, Massachusetts Institute of Technology, Cambridge, Massachusetts.

While admitting this change seems inevitable, he declared it "will certainly not be rapid." Few of us will live to drive atomic automobiles or fly jet planes powered by nuclear energy. When this time arrives, there will still be a petroleum industry, but it may have changed rather remarkably in character. Instead of petroleum being primarily used for fuel, it will be the raw material for all kinds of organic substances.

Goodman believes that petroleum and coal will probably continue for at least another generation as the primary sources of energy for transportation and heating. He also predicted water power and coal probably would generate most of the electricity during the next 50 years. The more likely specialized uses of atomic energy, he continued, will be extremely high temperature industrial processes, super-speed transportation, production of radioactive materials for industrial and medical purposes, the manufacture of rare elements for transmutation, and the treatment of materials by radiation.

Atomic Problems

In pointing out some of the problems associated with the utilization of atomic energy, Goodman said it "is important to realize that there are no pea-sized atomic bombs. Nothing less than the critical size will work. Hence, the explosion is one of Hiroshima proportions, or none at all."

By means of heat exchangers, he continued, it would be relatively simple to use some of the enormous amount of heat produced by piles of uranium or plutonium for household or other low-temperature heating. But in order to utilize such heat for industrial purposes, it would be necessary to operate the pile at temperatures comparable to modern steam power plants, and problems involved in this transition are very large. The technological gap was said to be comparable to the gap between the discovery of fire and the manufacture of a steam locomotive.

Because of heat radiations, shielding will be a major problem in adopting atomic energy to mobile units. This will add considerably to the weight and size of the units, and atomic energy might "be entirely ruled out on this basis alone," Goodman stated.

Virgil Jordan Heard

Virgil Jordan, president, National Industrial Conference Board, spoke on "The Frame of America's Future," presenting his estimate of the influence of atomic energy on all phases of living.

What has happened, he pointed out, is not merely or mainly that in release of atomic energy the world has found a new source of power, but it indicates that our "age of electronic alchemy can make anything—materials, machines and energy—out of anything or almost nothing, anywhere, in any amount at rapidly diminishing cost in terms of time and labor."

Economics will feel the effects of this technological accomplishment. One implication, he said, is that "long-term fixed interest investment in plant or property would seem likely to disappear not only because interest would have no point where money, as such, has no value, but because value of the fixed plant itself must evaporate swiftly in a productive system so varied in its output, flexible in its process, and fluid in its location as the industry of the atomic age is likely to be."

Economically and politically the world is a race between technology and

Next Annual Session Set For November 11-14, 1946

The next annual meeting of the Institute will be held in the Stevens Hotel, Chicago, November 11 through 14, 1946. Along with selecting this date the executive committee suggested that a study be made as to the advisability of holding a mid-year meeting next May in some Texas city.

insolvency, the speaker said, declaring that "America has moved steadily since 1918 from a technology of manufacture to one of transmutation, from an economy shaped by voluntary competitive production to one of compulsory collective consumption shaped by the power of the state. This has been accompanied by far-reaching social and political changes. As tool power is replaced by atomic power, political power is capturing both for purposes of its own."

We are witnessing a return to the ancient dogma of unlimited government in the world, Jordan said. Instead of fighting world wars for human freedom we will witness "the idea of unlimited government emerging as the universal victor in the minds of men everywhere, among conquerors and the conquered alike and it has been done so by force of the overwhelming power of America where the age of alchemy has come to the fruition in the atomic bomb."

Brown Spears

We have reached a crisis in research, both pure and applied, warned Bruce K. Brown, vice president of Standard Oil Company (Indiana) and this "can affect industry either favorably or unfavorably, depending on how it is handled." Two things, both of them brewing for 10 or 15 years and both of them boiling over with the termination of the war, combine to produce this crisis. "There is a shortage," he continued, "of skilled physicists, chemists and engineers, and there is a shortage of funds to train more."

Brown cited figures showing that the nation already is short 150,000 scientists who would have been graduated had there been no war and that taxation and other matters have reduced the financial funds of colleges and universities. These conditions mean that it is going to be impossible to increase the amount of research and development activities, as desired by industry, universities and government. Meanwhile, there has been a tremendous increase in sums expended by government agencies.

All these factors have resulted in the government taking a very great interest in the problem, with suggested remedies raising the question of how much of the research activities of the nation are to be in the hands of the government and how much directed by private enterprises. In turn, Brown pointed out, this raises the question of patents. If the nation's research is to be subsidized by federal funds, "why should not the federal government demand title to all patents obtained as a result?" this would, he asserted, eliminate all technical competition. "If we are to have competive industry, we must have competitive advantages."

Already there is a real battle among government agencies as to who will head the government's activities, the extent of activities dealing with patents and other matters involved. In this battle, Brown warned, "the bureaucrats carry the most weight in spite of the fact that the scientists have a fine wartime record to enfoce the unimpeachable logic of their side.

Plane and Boxcar

C. R. Smith, American Airlines, Inc., in a talk on "The Relationship Between Rail and Air Transportation," said the airplane is no competitor for the boxcar in the heavy freight business "and there is no present evidence that it will ever be."

However, he thought "there is no doubt that the airplane will compete with the train for transportation of long-distance passengers, transportation of mail and light cargo." He said airplanes would not get all this business, did not want it all but "under conditions where we can do a better job, we will get the business. Rail lines should soberly appraise the effect of the airplane upon railroads and adjust their plans accordingly."

Praise for the part the industry played in the war effort came from ranking military men. On the program as general session speakers were: Lieutenant-General James H. Doolittle, U. S. Army Air Corps; Lieutenant-General Raymond S. McClain, U. S. Army; and Vice Admiral Ben Moreell, U. S. N. Not only did these officers discuss the tremendous importance of petroleum as a fuel, the vast amounts used, but the assistance derived from the industry in building pipe lines and fueling stations. All warned of the necessity of assuring adequate future petroleum supplies, and urged the industry to continue its effort to discover new sources of supply and continue research efforts.

Organization's Activities Revised And Enlarged by Board of Directors

Activities of the American Petroleum Institute were revised and enlarged by action of its board of directors during the twenty-fifth annual meeting in Chicago last week. The board also approved the Anglo-American oil agreement, adopted a resolution in opposition to any taxation on the use of the nation's inland waterway system, and authorized further study of the scope of a public relations program.

Headquarters Unchanged

Action of the board in revising and enlarging activities of the institute sums up as follows:

(1) Headquarters will remain New York City, with provision for an adequate Washington, D. C., office, and elsewhere if deemed necessary.

(2) A new division—transportation—was added to the institute functions. All transportation activities are to be consolidated in this new division, which will have offices in Washington. A new office was created, vice president for transportation.

(3) Executive control of the Institute was transferred from the executive committee to the president.

(4) The president is authorized to (a) hire an assistant whenever he desires: and (b) create a foreign department whenever suitable conditions prevail.

(5) Public relations activities will be enlarged by formulating, adopting and carrying out a specific and comprehensive program.

The directors also passed a resolution asking that the petroleum and natural gas division of the Bureau of Mines be expanded so as to conduct and correlate continued basic research in the conservation and better utilization of these reserves.

Other Changes

Other changes included redefining the authority of the president and executive committee, and a provision that a quorum of the board would be 30 instead of 25 directors.

Memorial resolutions were adopted in respect to Thomas A. O'Donnell, first president of the institute; J. C. Hunter, former president of the Mid-Continent Oil and Gas Association; and B. B. Brooks, former governor of Wyoming.

API Pipeliners Organize, Name Burt Hull President

Pipeliners of the API formed a Pipeliners' Club November 13, electing Burt E. Hull, Texas Pipe Line Company, Houston, as president, and approving a board of governors composed of Captain W. R. Finney, Clark H. Kountz, Sinclair Refining Company, N. C. McGowen, United Gas Pipe Line Company, and Burt R. Bay, Northern Natural Gas Company.

The organization will schedule a banquet as a part of the activities for the 1946 API meeting.

The Board of Governors is expected to formulate rules establishing membership requirements, and probably designating the amount of service with a pipe line to qualify either as "water boy," "tong man" or "collar pounder."

The membership requirements and other matters pertaining to the organization of the Pipeliners' Club will be submitted to all men designated by the Board of Governors as being eligible, such eligibility to be determined on lists of possible members supplied from the rosters of pipe-line operating personnel.

Jennings Fills New Office

Boyd and Others Are Reelected

Officials of the American Petroleum Institute elected, November 15, included a vice president for transportation as provided for in the revised scope of the organization.

Officials are William R. Boyd, Jr., president; George A. Hill, Jr., Houston Oil Company, vice president for production; J. Howard Pew, Sun Oil Company, vice president for refining; Eric V. Weber, Eureka Oil Company, vice president for marketing; B. Brewster Jennings, Socony Vacuum Oil Company, vice president for transportation; O. D. Donnell, The Ohio Oil Company, treasurer; Lacey Walker, secretary and assistant treasurer. The only change was the addition of Brewster Jennings.

Executive Committee

The new executive committee is William R. Boyd,; Paul G. Blazer, Ashland Refining Company; R. H. Cooley, The Atlantic Refining Company; D. D. Collier, Standard Oil Company of California; Henry M. Dawes, The Pure Oil Company; J. Frank Drake, Gulf Oil Corporation; Jake L. Hamon, Cox and Hamon; Eugene Holman, Standard Oil Company (New Jersey); William F. Humphrey, Tide Water Associated Oil Company; A. Jacobsen, Amerada Petroleum Corporation; W. A. Jones, Cities Service Oil Company; John M. Lovejoy, Seaboard Oil Company; N. C. McGowen, United Gas Company; A. C. Mattei, Honolulu Oil Company; B. L. Majewski, Deep Rock Oil Corporation; Dan Moran, Continental Oil Company; Frank Phillips, Phillips Petroleum Company; Charles F. Roeser, Roeser-Pendleton; W. S. S. Rodgers, The Texas Company; H. F. Sinclair, Sinclair Oil Company; W. G. Skelly, Skelly Oil Company; Reese H. Taylor, Union Oil Company; R. G. A. Van Der Woude, Shell Oil Company; Robert E. Wilson, Standard Oil Company (Indiana); Ralph T. Zook, Sloan & Zook.

Directors Named

Fifty-six members were elected to the Institute's board of directors during the convention, of which 49 were elected by the board of councillors and seven were elected by the board of directors. Most of the incumbents whose terms expired were reelected. The new members:

W. G. Violette, Standard Oil Company of Kentucky, who will fill the vacancy of W. E. Smith in the marketing group for the eastern area.

B. BREWSTER JENNINGS

A. W. McKinney, The National Supply Company; A. B. Judd, Republic Supply Company; and J. L. Shakley, Jones and Laughlin Supply Company, were elected to the board's supply group. These succeeded Ferd Spang, Spang & Company; Guy Tompson, Bethlehem Supply Company; and A. E. Walker, The National Supply Company.

J. French Robinson, East Ohio Gas Company, was elected to succeed J. D. Creveling, Chicago, as a representative of the natural gas group.

New members elected to the at-large-group of directors were B. A. Hardey, Independent Petroleum Association; and Ralph Zook, Sloan & Zook.

Three new directors to the at-large-group elected by the board itself were W. F. Clinger, Pennsylvania Grade Crude Oil Association; O. D. Donnell, The Ohio Oil Company, and J. R. Suman, Standard Oil Company (New Jersey).

General Committee Named For Production Division

The Division of Production of the American Petroleum Institute elected a new general committee during the institute's twenty-fifth annual meeting last week.

Five members of the committee were appointed by the president. In this group were L. L. Aubert, Bankline Oil Corporation, Los Angeles; B. A. Hardey, Independent Petroleum Association, Shreveport; John M. Lovejoy, Seaboard Oil Company, New York; J. Edgar Pew, Sun Oil Company, Philadelphia, and R. C. Stoner, Standard Oil Company of California, San Francisco.

Elected by the membership of the division were the following: D. T. Andrus, Andrus & McDowell, Bradford; L. E. Barrows, The Texas Company, Houston; Virgil F. Bowyer, People's Natural Gas Company, Pittsburgh; P. H. Bohart, Gulf Oil Company, Tulsa; Stuart E. Buckley, Humble Oil & Refining Company, Houston; C. P. Dimit, Phillips Petroleum Company, Bartlesville; W. B. Emery, The Ohio Oil Company, Findlay, Ohio; David Frame, Humble Oil & Refining Company, Houston; R. H. Green, Signal Oil & Gas Company, Los Angeles; Walter S. Hallanan, Plymouth Oil Company, Charleston, West Virginia; Raymond Kelly, The Pure Oil Company, Olney; M. J. Kirwan, Cities Service Oil Company, Bartlesville; C. H. Kountz, Sinclair Refining Company, New York; W. C. MacMillan, Continental Oil Company, Ponca City; J. R. McWilliam, The Carter Oil Company, Tulsa; C. D. Miller, British American Oil Company, Tulsa; R. D. Montgomery, Richfield Oil Corporation, Los Angeles; H. S. Moss, Moss Petroleum Company, Dallas; W. M. O'Connor, The Atlantic Refining Company, Philadelphia; B. E. Parsons, General Petroleum Corporation of California, Los Angeles; Earle S. Porter, Amerada Petroleum Corporation, Oklahoma City; Frank Porter, Porter & Fain Drilling Company, Oklahoma City; L. T. Potter, Lone Star Gas Company, Dallas; T. D. Ring, Preston Oil Company, Columbus; A. Rowan, Rowan Drilling Company, Fort Worth; A. C. Rubel, Union Oil Company of California, Los Angeles; J. H. Russell, Gulf Oil Corporation, Houston; B. E. Smith, Magnolia Petroleum Company, Dallas; A. L. Solliday, Stanolind Oil & Gas Company, Tulsa; T. E. Swigart, Shell Pipe Line Company, Houston; O. W. Van Petten, Columbian Carbon Company, Charleston; E. S. White, Standard Oil Company of Texas, Houston; Earl Wallace, The Sohio Oil Company, Cleveland, and H. T. Wyatt, Union Pacific Railroad Company, Los Angeles.

Kingwood to Move

Kingwood Oil Company has completed plans to move its headquarters in Effingham to Jackson, Mississippi, where it has extensive holdings, about January 1. Illinois operations of the company will be handled through the Mt. Vernon office.

Spacing, Water Injection O

By HARRY A. HESS, Staff

Many Unnecessary Wells Are Noted

THE effect of well spacing on ultimate production of various fields, and the technology of water injection were the subjects of discussion before the Division of Production at the twenty-fifth annual meeting of the American Petroleum Institute.

At one session, a symposium was presented to bring the thoughts on well spacing up to date. Well spacing as high as 60 acres per well was recommended for certain types of reservoirs by W. H. Barlow, and W. B. Berwald, both of The Ohio Oil Company. These engineers reported that the necessary or "optimum" number of wells actually recovers the maximum amount of oil from a given field, some wells, such as those in a gas cap, being worse than unnecessary. Methods are now available which permit reliable estimates of the behavior of an oil or gas reservoir throughout its entire life, based on the economies involved of the number of wells that should be drilled to obtain the greatest possible ultimate recovery of oil and gas.

Spacing Factors

Many factors enter into the calculation of proper spacing for ultimate recovery that can only be determined as the reservoir is being developed, and these factors may change even during the "old age" of the pool. By careful comparison of the character of the field under consideration with the case histories of similar existing or depleted fields, determinations of proper spacing for new fields can be made.

At the same session, R. C. Craze and S. E. Buckley of Humble Oil & Refining Company presented a paper, "A Factual Analysis of the Effect of Well Spacing on Recovery," in which 97 oil fields in the United States were studied in an effort to correlate well spacing and ultimate recovery. Their conclusions were that well spacing seems to have little to do with optimum recovery. The recovery from the fields studied, they concluded, "is dependent upon the viscosity of their oil, their reservoir pressure declines and their formation permeabilities."

Third Survey

A third survey by W. V. Vietti and O. F. Thorton, The Texas Company; J. J. Mullane, The Carter Oil Company; and A. F. van Everdingen, Shell Oil Company, Inc., reported that a study of closely similar fields in Texas revealed that no more oil was recovered from closely drilled fields than others where wells were far apart. They recommended that well locations be based on engineering data collected by a study of the behavior of oils in the reservoir.

Prepared copies were not available on papers at the well spacing session.

The other session of the Division of Production featured the technology of water injection. Abstracts of the prepared papers follow:

Interactions Between Interstitial and Injected Water—a Review

By A. J. W. HEADLEE,
West Virginia Geological Survey,
Morgantown, West Virginia

An attempt has been made to present the quantitative as well as the qualitative aspects of the problem of solids forming in oil and gas field waters during recovery operations. The purpose is to develop, eventually, sufficient data in one paper so a balance sheet can be made of the precipitates which may form in any operating system. Many quantitative data remain to be determined.

The more common precipitates which form in recovery systems are carbonates, sulfates, sulfides, sulfur, iron oxide, silicates, and organic residues. Although the quantity of these precipitates which may form is small, it is also true that the quantity necessary to cause serious plugging off of a well is quite small. In fact, a fraction of a pound of precipitation may cause a considerable decrease in the permeability of a well. The extent of the plugging off effects will depend not only on the amount of precipitate formed, but also on its nature. The particles may be too large to enter the pores of the sand. Then again, they may be small enough to circulate freely through the pores.

Precipitates may be formed either by physical or chemical action. Physical changes which may cause precipitation or solution of solids are temperature, pressure, evaporation, and condensation. Precipitation due to chemical action may take place when the partial pressure of some of the gases in contact with the water is changed, when salts in waters of different composition react to give a slightly soluble salt, when oxygen enters the reservoir, and when the injected water reacts with substances of the reservoir rock.

A large amount of research work is necessary to complete the picture. It should be possible to obtain sufficient data so that one could predict precipitation before it has a chance to lower the permeability of the sand.

Injection of Water Into Underground Reservoirs in the State of Michigan

By W. E. SCHOENECK,
The Ohio Oil Company,
Grand Rapids, Michigan

The State of Michigan and the Department of Conservation prohibit storage of oil field brine waters in earthern pits. Therefore the disposal of oil field brines is of primary importance, with the preservation of reservoir pressures only of importance where it is possible to reinject the brine into the producing formation of sands such as the Traverse formation.

One deviation from standard practice in the Mid-Continent area is the practice of using the annular space between the surface pipe, the intermediate casing, and the production casing of producing wells for salt water injection. This allows for a wide range of sands to be available for disposal purposes. Where gravity flow cannot be obtained, a pump can be connected to the beam of a pumping well. Little surface equipment is used as the fields are not very long lived, and the injection formations usually can be restored to their original capacity by chemical treatment.

An excess of 90 percent of the salt water produced with crude oil is currently being returned to underground formations.

A summary of disposal facilities in the state from July, 1943, to July, 1944, show a total of 279 wells were used to dispose of 93,560 barrels of water daily. There were 178 wells being used to inject 22,248 barrels into the annular space between casings; 86 wells used to inject 64,926 barrels into wells converted from oil wells; and 15 wells drilled for disposal injecting 6332 barrels daily.

Technology of Water Injection in the Allegany Field, New York

By GEORGE W. HOLBROOK and
WILBUR H. YOUNG, JR.,
Bradley Producing Corporation,
Wellsville, New York

The Allegany field was discovered in 1879 and reached a peak annual production of 6,450,000 barrels for 1882. Roughly half the oil produced has been by secondary recovery methods, which have taken about 20 years, compared with 45 years to produce the other half by primary methods. Between 50 and 80 million barrels of oil remain to be produced by present methods of secondary recovery. Daily average production for the second quarter of 1944 was 10,225 barrels, of which less than 500 barrels per day were from wells not affected by water flooding operations.

Occupy Production Group

Staff Writer

Five-spot spacing pattern is fairly standard for the field with input wells at the corners of property lines, and wells spaced between 200 and 400 feet apart. Input water pressures vary from 400 pounds per square inch to the critical pressure at which by-passing takes place. The critical pressure ranges between 0.8 and 1.2 pounds per square inch for each foot of depth. Intake rates average one barrel of water per day for each foot of sand exposed. Where rates are too high, selective plugging methods are employed, which usually entails the use of cement for open parts of the formation at the lower portion of the sand body and the use of wax distillates and emulsions in the upper part.

Air lift is usually employed to raise to the surface the water used as flooding medium. This helps to oxidize any iron or manganese in the water so it can easily be filtered out. The open type of treatment is used in practically all cases, with filters employing sand and gravel beds. The average life of water intake wells in the Allegany field is between 12 and 15 years.

Future trends in the operation of this field include: (1) more careful measurement of input waters, (2) attempts to increase inputs into tight sands by shooting and the use of wetting agents, (3) methods of decreasing the intake of highly permeable strata, (4) completing wells in such a manner that workover jobs will be easier by eliminating pipe below the packer or making this pipe removable, (5) more attention paid to the quality of input waters, (6) standby sources of flood waters to relieve the shortage during the fall months of the year, (7) better core analysis, and (8) determination of maximum safe input pressures.

Behavior of Water-Input Wells

By PARKE A. DICKEY
Quaker State Oil Refining Corporation, Bradford, Pennsylvania
and KURTH H. ANDRESEN,
South Penn Oil Company, Bradford, Pennsylvania

A study of the behavior of water input wells was made to determine why wells in the same area and same sand often have different water-intake capacities and to learn why intake capacities vary with time in any one well. The maximum rate of water injection is attained when water is first introduced into the underground reservoir. This rate depends upon: (1) effective permeability of the sand, (2) viscosity of the water, (3) sand thickness, (4) effective radius of the well, (5) pressure within the reservoir, and (6) applied water pressure.

As more and more water is injected, other factors such as "fillup factor" and the plugging action of foreign matter in the water enter the picture. By evaluating factors which cause the decline in injection rates, it is possible to apply proper controls to the factors that are controllable. This is attained by increasing the size of the hole through a larger bit or by shooting. Shooting was found to increase the intake rate four or more times.

The use of the injectivity index was introduced to determine whether declines were due to plugging of the sand and therefore remedial, or whether due to fillup of the reservoir and therefore irremedial. The expression, "localized injectivity index" was used to describe the permeability of the sand face adjacent to the reservoir. This was determined by shutting in an injection well for several hours until the transient back pressure fell very slowly, which allowed the pressures to nearly equalize in the vicinity of the well. Injection was then reinstituted and pressures raised in increments of approximately 100 pounds per square inch and the intake rates at the end of the equal time periods were measured. Intake rate plotted against pressure was found to be a straight line up to pressures slightly above the weight of the overburden. The slope of the line is the localized injectivity index, i.e. $\frac{\text{change in intake rate}}{\text{change in pressure}}$. Many equations were presented to show this relationship mathematically.

The injectivity index increases suddenly when a certain sand face pressure is exceeded, and usually is accompanied by prompt and spectacular increases in water production of nearby oil producing wells. More moderate increases in injectivity indices probably are common and unnoticed, and give rise to serious but unsuspected inefficiencies in many operations. The mechanics of rupture were analyzed, showing that the pressure parting may be along bedding planes, but more likely is along cracks formed by the shot. Examples of breakthroughs were explained with curves to show the change of intake rate with increased pressure.

Pressure Maintenance by Water Injection, Midway Field, Arkansas

By WILLIAM L. HORNER,
Barnsdall Oil Company, Tulsa

Conclusive results are now available from operation of the first project for maintenance of pressure over an entire pool by injection of extraneous water. Data obtained from 28 months of operation indicate the following results: (1) the possibility that the amount of oil recoverable during the primary stage is doubled; (2) the permissible rate of production is indicated to be twice the rate expected if injection had not been successful; and (3) the costs are reasonable.

The field produces from the Smackover limestone formation at about 6500 feet. Four dry holes, converted to injection wells, currently receive approximately 8000 barrels per day of fresh water plus 1000 barrels of salt water disposed from lease tank batteries. All the water is injected at pressures of 450 pounds per square inch or less, utilizing approximately 50 horsepower. A blanket of gas at a pressure of one ounce is maintained on the surface of settling and skimming tanks so as to exclude atmospheric oxygen both gathering systems being of the closed type.

On September 1, 1945, the pool had produced 7½ million barrels of oil, and 5 million barrels of water had been injected. Prior to the injection project which commenced in April, 1943, reservoir pressures had fallen 20 pounds per month, with an oil production rate of 5500 barrels daily. Since February 1, 1944, reservoir pressures have risen 65 pounds, with current oil production rates up to 7500 barrels per day.

For other oil and gas pools it is suggested that, if this procedure is selected, following careful study of the pool performance, diligent engineering control should be exercised in order to insure maximum success in applying the process described. This would entail the use of exteraneous water to replace the oil in water drive pools and the use of gas injection in gas cap fields.

Emsco's Hugh Glen Heads Equipment Suppliers Group

Hugh H. Glen, Emsco Derrick and Equipment Company, Los Angeles, was elected president of the Petroleum Equipment Suppliers Association, whose board of directors met November 13 in the Chicago Athletic Club. Arden B. Judd, Republic Supply Company, Houston, was chosen vice president and Wharton Weems, Houston, was re-elected secretary.

Because of inadequate facilities for normal meeting of the American Petroleum Institute, the equipment association decided to have only a meeting of its directors during the API sessions.

121 Texas Permits

The Railroad Commission of Texas this week approved permits for the drilling of 121 new wells. There were 35 in North Texas and 31 in Southwest Texas. There were 16 locations in West Texas, 14 in the Gulf Coast, 11 in West Central Texas, ten in the Panhandle and four in East Central Texas.

Well-Balanced Operations Indicated By Latest Weekly Reports on Trends

The industry's operations were fairly well balanced in the week ended November 10, reports to the American Petroleum Institute indicated. There was an increase in crude production and refinery runs were slightly lower than in the previous week. Production of gasoline showed an increase, and stocks accumulated seasonally. Distillate fuel oil output declined but stocks showed a small rise. Residual fuel production was down and some came from storage.

U. S. crude production averaged 4,451,000 barrels daily, up 133,000 from the week before although 276,000 daily or 5.8 percent less than in the corresponding week last year. Crude runs to stills averaged 4,789,000 barrels per day, down 18,000 from the previous week but 107,000 daily or 2.3 percent above the runs of 4,682,000 daily in the like week last year. Crude stocks declined 3,199,000 barrels in the week ended November 3, the Bureau of Mines reported.

Production of gasoline amounted to 15,793,000 barrels for the week, the API reports indicated. That was 559,000 barrels more than output in the previous week and was 1,106,000 barrels or 7.5 percent more than the 14,687,000 barrels produced in the like week a year ago. Stocks of finished and unfinished gasoline rose 1,637,000 barrels during the week and then amounted to 78,188,000 barrels, which was slightly more than the 77,873,000 barrels held a year previously. Civilian grade stocks increased 1,778,000 barrels to a total of 52,471,000, which compared with 38,927,000 barrels 15,793,000 barrels for the week, the API held a year ago. Military and other grades in storage declined 141,000 barrels to 25,717,000, and that compared with 38,946,000 barrels held a year ago.

Distillate fuel oil production totaled 4,851,000 barrels in the November 10 week, a decrease of 135,000 from the previous week but 375,000 barrels or 8.4 percent more than output in the like week last year. Stocks were increased 316,000 barrels, rising to 45,126,000 barrels, but that amount was about 2 million barrels or 4.6 percent less than the 47,281,000 barrels held a year before.

Residual fuel oil production of 8,687,000 barrels was 235,000 less than in the preceding week and 781,000 barrels or 8.2 percent less than the 9,468,000 barrels turned out in the comparable week last year. Stocks were reduced by 192,000 barrels, or to 45,936,000 barrels, an amount about 8 million barrels or 15 percent less than the 54,122,000 barrels held a year previously.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	[1]4,944	7-14	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,126	11-10	56,074	1- 6
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26

TRENDS OF 1944 AND 1945

Trends in Week Ended:	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,380
January 29	4,400	4,359	240,251	13,427	81,075	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,018	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,342	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	4,762	4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,427	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,430	8,923	60,458
December 16	4,695	4,537	222,075	14,145	82,747	4,353	42,413	8,727	59,280
December 23	4,729	4,682	222,575	14,635	83,355	4,605	40,846	8,798	58,509
December 30	4,705	4,798	222,998	15,342	86,614	4,257	39,495	9,156	57,430
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 2	4,859[r]	4,804	224,079	15,317	88,696	4,857	29,819	9,437	39,022
June 9	4,853	4,827	221,552	15,256	87,896	4,842	30,339	9,382	38,996
June 16	4,888	4,915	221,932	15,132	87,504	5,342	30,397	9,252	39,482
June 23	4,898	5,002	220,974	15,367	87,462	5,014	31,761	9,558	39,893
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 7	4,886	5,006	217,250	15,082	86,329	4,875	33,667	9,238	40,754
July 14	4,944	4,945	216,355	15,349	85,401	5,197	34,804	9,337	41,489
July 21	4,944	4,927	218,108	15,430	85,930	5,090	35,458	9,071	42,480
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 3	4,318	4,807	221,031	15,234	76,551	4,986	44,810	8,922	46,128
Nov. 10, 1945	**4,451**	**4,789**	.....	**15,793**	**78,188**	**4,851**	[5]45,126	**8,687**	**45,936**
Nov. 11, 1944	4,727	4,682	[5]222,467	14,687	77,873	4,476	47,281	9,468	54,122
Change:									
In week	+133	—18	—3,199	+559	+1,637	—135	+316	—235	—192
In year	—276	+107	—1,436	+1,106	+315	+375	—2,155	—781	—8,186
In year	—5.8%	+2.3%	—0.6%	+7.5%	+0.4%	+8.4%	—4.6%	—8.2%	—15.1%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, November 4, 1944.

Majors Want Price Hike at Well Mouth, Survey Shows

Results of a survey of 17 major oil companies by the Independent Petroleum Association of Texas show that ten favor an increase in the price of crude oil at the mouth of wells in the Mid-Continent area.

D. Harold Byrd, president of the group, disclosed that the companies also favor a corresponding rise in the price of petroleum products. Two of the major companies, Tide Water Associated Oil Company and Shell Oil Company, withheld their views and five others have not answered, Byrd said.

Companies favoring the position outlined in the survey, as announced by Byrd, are Magnolia Petroleum Company, Humble Oil & Refining Company, The Texas Company, Standard Oil Company (New Jersey), Standard Oil Company of Indiana, The Pure Oil Company, Continental Oil Company, Phillips Petroleum Company, Cities Service Oil Company and Socony-Vacuum Oil Corporation.

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Capacity Hike Planned for New Mexico-Colorado Line

The Colorado Interstate Gas Company has filed an application with Federal Power Commission to construct additional compressor facilities at five points in New Mexico and Colorado, the effect of which would be to increase the delivery capacity of its transmission system by approximately 8 million cubic feet daily, at a cost of $1,196,978.

An application also has been filed by Colorado-Wyoming Gas Company for authority to purchase 39,270 feet of ten-inch lateral pipe line from Colorado Interstate for $58,872 and to build a new compressor station to replace its present Arapahoe station, which will increase the capacity of its compressor facilities to 18 million cubic feet daily.

The commission has set January 8 as the date for hearings on the application of the Michigan-Wisconsin Pipe Line Company for construction of a 1216-mile, 26- and 22-inch line from the Hugoton gas field, Texas, to the Austin storage field, Michigan, and to acquire an existing 140-mile, 26-inch transmission line from Austin field to Detroit.

The entire construction project is planned on a four-year basis with about 1076 miles of the main line to be completed within the first year at a cost of $49 million. If the project is entirely completed, the company expects to sell about 105,120 million cubic feet of natural gas yearly after the first five years, supplying 49 communities in Wisconsin, Illinois, Iowa and Missouri.

Magnolia Hikes Capacity of West Texas Booster Station

Magnolia Pipe Line Company is adding three gas-powered 12-inch stroke pumping units to its booster station in the Fullerton field, Andrews County sector of West Texas, to increase the capacity from 24,000 barrels to 30,000 barrels daily.

This station handles all the sweet crude produced in the Fullerton, Fullerton-Devonian and Union fields via a 16-mile 4½-inch and a six-inch line to Andrews station and tank farm, where connection is made with the company's multi-unit trunk line. The extra pumps are to be in service late in November, and will forestall pipe line proration that has been threatening due to allowables crowding the pipe line outlet.

Central to Deliver Crude To Pan-American Company

Pan-American Refining Corporation has contracted to purchase a minimum of 2500 barrels and a maximum of 4000 barrels daily of the 42-43-gravity Paluxy crude gathered in the Quitman field, Wood County sector of East Texas, by the Central Pipe Line Company for three years with option to extend the contract for a five-year period.

Fulfillment of the contract is contingent upon Central continuing to run and purchase 2900 barrels of the daily output held by Shell Oil Company. The oil will be delivered to the East Texas field by Central's line, thence via the Pan-American Pipe Line Company's trunk line to the Texas City plant. Pan-American has purchased Quitman crude in the past and diverted it to the Big Inch, while its East Texas-Texas City carrier was reversed to serve as a feeder for the latter.

Tulsa Firm Laying Midwest Crude and Products Lines

Williams Brothers, Tulsa pipe line contractors, are constructing several oil and products lines.

Work is in progress at Fort Madison, Iowa, where a 16-inch crude line is being laid at a river crossing. Near Lawrenceburg, Ohio, contractors are laying a seven-inch crude line across the Ohio river for The Ohio Oil Company, while two eight-inch products lines are being laid at a river crossing north of Blair, Nebraska, for Great Lakes Pipe Line Company. The firm also is laying 56 miles of eight-inch natural gas line for the Great Lakes firm north from Omaha, Nebraska.

Magnolia Contracts for Oil From Onyx Refining Company

Market relief for excess crude production in the Jones and Taylor Counties sector of West Central Texas will materialize January 1 when Magnolia Petroleum Company starts purchasing 5000 barrels daily on two-year contract from the Onyx Refining Company at the posted price, plus 5 cents per barrel gathered tariff.

The bulk of this oil is from flush wells in the Wimberly and Reddin multi-pay fields. Onyx will extend its line to a point near Merkel on Magnolia Pipe Line Company's sweet crude outlet for West Texas. An 80,000-barrel tank will be erected by the latter to receive the oil, which will be routed in batches via Corsicana thence north. It is reported that Magnolia will make available 1000 barrels daily to Sohio Petroleum Company.

Kansas Line Under Way

Construction has started on 18½ miles of eight-inch natural gas line for Kansas Power & Light Company from a point about 1½ miles southwest of Lake City, Kansas, across the Medicine River to Pratt, Kansas, where it will tie in with the company's main gas line. M. E. White Construction Company of Wichita, Kansas, has the contract.

Tanks Being Built

The Empire Pipe Line Company is erecting three 80,000-barrel steel tanks to its Bumpas station and tank farm in the East Texas field to facilitate the handling of deliveries of sour crude from the Magnolia field, Arkansas, and also from the East Texas field by the Arkansas Pipe Line Corporation.

Pure, Stanolind to Exchange East Texas-Oklahoma Crude

The Pure Oil Company and the Stanolind Oil Purchasing Company have contracted to exchange 6800 barrels daily of East Texas field crude for an equal volume of Oklahoma production held by the former in the Cumberland and Oklahoma City fields.

Stanolind Pipe Line Company will accept delivery of the Oklahoma oil, while 5800 barrels daily of the East Texas crude destined for use in Pure's Smiths Bluff refinery, near Beaumont, will be routed via the Sun-Yount-Lee Pipe Line Company on a common carrier basis. The remaining 1000 barrels daily will be shuttled through the Toronto Pipe Line Company's field gathering line, thence via the Bell-General Pipe Line Company to Bullard, where Pure Transportation Company will alternate runs with those from the Van field.

Equipment Is Ordered for Kansas City Products Line

Great Lakes Pipe Line Company has ordered 25 turbo-driven 850-horsepower Diesel engines for the Barnsdall-Kansas City-Des Moines and Kansas City-Sioux Falls section of its 370-mile, eight-inch products line, construction of which is now getting under way. Pipe has been laid on the ground for the northern spread. A 200-mile section between Kansas City and Omaha will be laid next spring. An innovation in the coating of the 370-mile line will be the use of fiberglas wrapping to improve application of the coating.

Contractors have established headquarters for the job. Midwestern Engineers are at Sioux Falls with R. H. Dodson, superintendent in charge; Williams Brothers are at Blair, Nebraska, and at Sioux Falls with H. L. Davis and T. E. Davis in charge. Williams Brothers will lay two eight-inch lines across the Missouri River.

Sinclair Awards Contract

O. C. Whitaker has been awarded a contract by Sinclair Refining Company to lay 14 miles of six-inch oil line and 3½ miles of gathering lines as an outlet for oil in the Sivells Bend pool of Cooke County in North Texas. Field station to handle 13,000 barrels daily is also being erected.

Placid Builds Refinery

Placid Oil Company, subsidiary of the H. L. Hunt interests, has purchased a tract of 27 acres near Tuscaloosa, Alabama, and is starting a refinery which will process crude oil from the Gilbertown and East Gilbertown fields of Choctaw County, and from Langdale field in Clarke County, Mississippi. The refinery's capacity will be between 2500 and 3000 barrels per day. Owners plan to produce road and roof materials from the heavy asphaltic oil.

FPC Sets November 26 for Hearing on Plans to Build Texas Gas Facilities

The Federal Power Commission last week consolidated several natural gas company applications for new facilities and fixed dates for two hearings.

The commission ordered a hearing November 26 on the consolidated applications of Tennessee Gas and Transmission Company. One covers the construction of 95 miles of 16-inch pipe line from the San Salvador field, Texas, to its main transmission line in Neuces County together with a dehydration plant. The other seeks authority to build approximately 2380 feet of eight-inch line in Harris County, Texas, to connect with the ten-inch Katy-Satsuma line of United Gas Pipe Line Company.

In another order, FPC set for hearing December 10 the consolidated applications of Natural Gas Pipeline Company of America, Texoma Natural Gas Company and Chicago District Pipeline Company.

In those applications, Texoma seeks authority to install four new 1250-horsepower compressor engines at Station 22 in the Panhandle field and to build 25.86 miles of 26-inch line to loop its 24-inch transmission line near Gray, Oklahoma. Natural asks approval of the construction of 24-inch line where no loops now exist, and a number of short lateral lines in Iowa and Illinois. The Chicago company asks permission to parallel two sections of its Crawford line in Illinois with approximately 23 miles of 24-inch line.

The commission announced denial of a petition filed by the City of Louisville for an investigation to determine the cost of production and transportation of natural gas sold by the Kentucky-West Virginia Gas Company to the Louisville Gas and Electric Company, on the ground that it has no jurisdiction in the matter since the gas is not transported in interstate commerce.

Houston Firm to Construct Sun's Southwest Texas Line

J. R. Horrigan Construction Company, Houston, has been awarded a contract by Sun Pipe Line Company to construct a trunk line that will extend from several Southwest Texas fields already linked by gathering systems to a tanker terminal at Harbor City, near Corpus Christi.

The contract calls for 84 miles of 10-inch pipe from the Seeligson area near Premont to Aransas Pass, and 34 miles of 8-inch pipe from the Kelsey-Bass field in Brooks County to the Sullivan-Mariposa area in Jim Wells County.

Work on this project will get under way the middle of December.

Gulf's 450 Miles of Loops Now 40 Percent Complete

Approximately 40 percent of Gulf Refining Company's 450 miles of loops between West Texas fields and its refinery at Port Arthur is complete and in service. The lops will facilitate the movement of sweet crude from West Texas to the Gulf Coast refining center.

This project, costing $8 million, will increase the company's Permian Basin outlet to 115,000 barrels daily.

Pipe laid and in service includes 29½ miles of 12-inch between Chester and Sour Lake; 14¾ miles of 12-inch south of Lufkin; 8 miles of 8-inch from Lufkin to Elkhart; 20 miles of 8-inch west of Wortham; 11½ miles of 10-inch west of Elkhart and 8 miles of 10-inch between Judkins and Midland.

Four miles of the 29½ miles of 10-inch from Sour Lake to Port Arthur, 4 miles of the 12 miles of 10-inch east of Wortham, 57 miles of the 62 miles of 8-inch from Keystone to Midland, and 50 percent of the 31 miles of 10-inch between Lufkin and Elkhart have been laid. All loops between Wortham and Midland are waiting on pipe.

Contractors on this project are J. R. Horrigan Construction Company of Houston, Oklahoma Construction Company of Dallas, and Associated Contractors and Engineers of Houston.

Shell at Work on Extension Of Wink-McCamey System

Shell Pipe Line Corporation is working on a ten-mile, six-inch extension from its Wink-McCamey multi-unit system at a point in south central Crane County, Texas, to the Crane station of the Texas-New Mexico Pipe Line Company.

This unit will handle 4500 barrels of sweet crude daily from purchases by Shell Oil Company in the TXL, Wheeler and Monahans-Ellenberger fields, and contracted for one year, starting December 1 by Cities Service Oil Company for use in its Lake Charles, Louisiana, refinery.

The Texas-New Mexico Pipe Line Company will move the oil in batches from Crane station to Houston, where The Texas Pipe Line Company will relay the oil to Sour Lake, making connection with the Empire Pipe Line Company's trunk line to Lake Charles.

Stanolind Lays Line

Stanolind Pipe Line Company is providing an outlet for the Risch and Joplin pools in the Jack County sector of North Texas by laying nine miles of four-inch discharge line to Jacksboro Junction station on its Gulf Coast-Chicago trunk line. The new unit will consist of seven miles of spiral pipe and two miles of welded pipe, while three miles of spiral pipe will be used for gathering.

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China-India Artery Was Hardest-Built Pipe Line in the World, Says Kinsolving

Several thousand pipe-liners from the Mid-Continent and Southwest, working under almost insurmountable difficulties, built 3500 miles of pipe line from India into China—a pipe line which was one of victory's life lines—and which was recently described by Col. W. C. Kinsolving of Beaumont, Texas, as "the hardest built pipe line in the world." Colonel Kinsolving, who has been named manager of Sun Oil Company pipe line operations, played a big part in the building of the "Big Inch" in this country.

The experiences of two years in the jungles and mountains of China, Burma and India are being set forth in a book being written by Colonel Kinsolving.

Confronted with a crisis when Chiang Kai Shek threatened to quit fighting for lack of oil which was then going into China at the rate of a few drums a day, the pipe line was projected as a last desperate measure at the Quebec conference of 1943. American oil men were asked their opinion about constructing this oil artery through the jungles and mountains of Asia and while they agreed that it was a gigantic task they also declared that American crews could and would build the pipe line.

Colonel Kinsolving was placed in charge of the project and personally directed the construction of the section from Calcutta to Ledo.

When the pipe line was finally laid it delivered an average of 40,000 to 50,000 tons of desperately needed oil and products per month and kept the Chinese armies in the field besides supplying the needs of American aviation.

Three Routes

There were three routes for supplying the Chinese armies: (1) The Ledo Road; (2) flying the "Hump" across the Himalayas; (3) the pipe line.

All these routes dovetailed into the other and each depended on the other for ultimate success. Trucks along the Ledo Road brought supplies to the pipeliners and soon the line was carrying oil for the bull dozers and other equipment. The Ledo Road and the pipe line fulfilled the general purpose of a short-cut to China and a by-pass of enemy held territory.

After completing the line from Calcutta to the Ledo Road, Colonel Kinsolving distributed the command of the crews among other experienced officers who carried the artery on to Kunming.

Part of the 3500-mile route had to be crossed by not one but several pipe lines. There were two 6-inch lines from Calcutta and Chittagong converging at Tinsukia in the heart of Assam and these carried about 50,000 tons of oil monthly. From the beginning of the Ledo Road into Burma there were two 4-inch lines and one 6-inch. One 4-inch line went right through to Kunming.

The pipe lines were built from sea level through jungles where temperatures ranged from 125 to 130 degrees in the shade and where there is the highest recorded rainfall in the world, across elevations of 9000 feet where men endured freezing weather, monsoons and multitudes of insects.

"Only the brawn, stamina and heart of the men as well as the thorough training they received before going to the Far East made it possible for them to stick it out and to complete the task successfully," Colonel Kinsolving declared. "They did far more than the war department or any one else had any idea could have been done and it is still almost inconceivable to realize the things they achieved under the conditions they had to overcome. They compared with the Seebees who built stations in the Pacific Islands and the men who stormed the beaches at Normandy. Perhaps their work was not as spectacular, but it was just as dangerous, perhaps harder and of equal importance," Colonel Kinsolving declared.

What of the future of the world's longest pipe line?

At the present time the lines are filled with water just as is the "Big Inch" in this country.

They are "surplus" but just how they can be "liquidated" is a problem for which, so far, no one has come up with a solution. With American troops gone the upkeep of the project will be impossible. The inroads of the jungles and nature are swift and deadly. A monsoon, a landslide, and soon no man could even find a trace of the line.

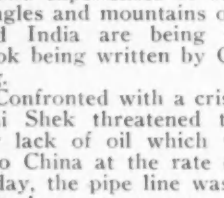
Colonel Kinsolving said that the line might be traded or even given to the British.

Only Five Rigs Being Used In Colombia Wildcatting

Only five rigs are engaged in actual wildcat drilling in Colombia.

The activity of the country as a whole, in proven and wildcat areas, shows 19 rigs in actual operation, but 14 of these are in use on the De Mares, Barco, or Yondo (Casabe) concessions already under exploitation, or on the El Deficil and Cantagallo concessions, where the Shell Group and Socony Vacuum, respectively, have established production which has not yet been given an outlet.

One of the Barco wells, Colombian Petroleum Company's Tres Bocas 4, may be considered an exploratory well, being a deep test to the Lower Cretaceous formation about six kilometers west of production in the field.



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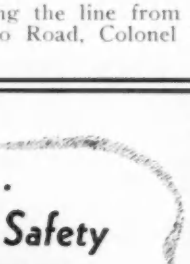

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McClain County Has Pool Opener, Another Probable

McClain County has new pool and another probable; Spaulding area has discovery; Skelly test has oil shows; Phillips opens Panhandle gas area.

McClain County: The Carter Oil Company has opened a new deep Wilcox sand pool 4½ miles northeast of Criner when Mottinger 1, CNW NW 5-6n-3w, indicated a daily potential of 1500 barrels of oil. This is the third deep pool credited to Carter operations in McClain County. The discovery well was drilled to 10,844 feet, total depth. Seven-inch pipe was set and cemented at 10,815 feet. A production test was made through drill stem and when the tool was opened the well flowed drill water in 15 minutes and oil in 22 minutes under 700 pounds pressure. The flow was connected to separator and pressure increased to 1000 pounds when a valve blew out and the well was shut in. After repairs were made it was put back on the line and in the first hour gauged 82 barrels. The flow increased in the second hour to 90 barrels.

Carter has another prospective pool opener at Hawkins 1-C, CNE NE 34-6n-3w, wildcat southeast of Criner. Topping Viola lime at 8739 feet which is more than 70 feet higher than Cities Service Oil Company's top for this formation at its Lawson 1, pool opener north of Lindsay in McClain County, operator has been coring and reporting oil stains and odor. A drill-stem test failed when the packer slipped and the crew recovered oily mud.

Hughes County: Iron Drilling Company has a new pool in the Spaulding area. The discovery well is Davis 1, SE NE NW 15-6n-8e. It logged the Booch sand at 2590 feet, where it set 7-inch pipe, and after drilling out to 2631 feet and shooting with 60 quarts from 2595 to 2625 feet, the wildcat bailed considerable free oil. Pumping units will be installed for potential test. North of the discovery, W. N. Bartlett et al's Howell 1, SE SW SW 10-6n-8e, had the Booch sand from 2615 to 2621 feet which showed good staining and odor. Seven-inch pipe has been set for production test.

Stephens County: After reporting a good oil show at Williams 1, SE SW SE 16-1s-4w, Skelly Oil Company was coring. The show was logged in a sand at 5586-5622 feet in the Pennsylvanian series. At this point operator recovered 100 feet of oil-cut mud on a drill-stem test. Hole was drilled to 5680 feet, where another sand was picked up. The test is a wildcat northeast of the Velma area. Southwest of Alma, Skelly plans to test Chilton-Mayo Unit 1, CNW SE 14-2n-4w. It was drilled to 7177 feet and has already tested several zones after being plugged back. Operator is now cutting off and pulling pipe to test a sand at 2914-40 feet. The well has experienced considerable drilling difficulties and prospects are not so good.

Texas County: The Oklahoma Panhandle which has been attracting more than unusual attention following a recent oil strike by The Pure Oil Company northwest of the Keyes pool, apparently has another gas field indicated by the successful completion of Phillips Petroleum Company's Patkins 1, SW SW NE 32-1n-17ecm. The wildcat is about 12 miles southeast of Guymon at the southern end of the big Hugoton gas pool. The Patkins well at 3110 feet, total depth, tested 13 million cubic feet of gas daily with 430 pounds rock pressure. Production is from the Permian with perforations from 2710 to 2970 feet.

Pottawatomie County: In an isolated area west of the Romulus pool, James F. Smith of Shawnee appears to be opening a new oil pool at Kirker 1, SW SE NW 3-7n-3e. The producing horizon is the Bois D'Arc section of the Hunton lime, source for the big West Edmond pool. Hunton was topped at 4540 feet with the Sylvan shale at 4915 feet and the hole was carried to 4925 feet.

☆Kansas

Pool Opener Likely Near Wichita, Sedgwick County

Pool opener seen northeast of Wichita; Lion opens new zone in Coats pool; Meade County wildcat opens new oil field; Stoltenburg pool extension indicated.

Sedgwick County: Beech Aircraft Corporation appears to have a pool opener about 2 miles northeast of Wichita. A show of free oil was reported at Beech's Hinkle 1, SW SE NW 6-27s-2e. Topping Mississippi lime at 2988 feet, the free oil was logged in the first 2 feet drilled in the formation. Seven-inch casing has been set for production test.

Pratt County: Lion Oil Company, discoverer of the Coats pool, has established commercial production in the Arbuckle lime. Andrews 3, NW SE SE 24-29s-14w, topped Arbuckle at 4298 feet. The hole was carried to 4400 feet and after casing was set and perforated be-

Wells Completed in United States in Week Ended November 17, 1945

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	2	....	....	....	2	....	....	....	....	....	2	....	33	33
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	....	6
Arkansas	5	....	....	....	5	....	1	....	2	3	8	4	173	201
California	21	2	....	....	23	....	....	....	5	5	28	31	1,891	1,802
Colorado	....	....	....	....	....	....	1	....	....	1	1	1	43	24
Florida	....	....	....	....	....	....	....	....	....	....	....	1	14	3
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Illinois	21	....	1	5	27	....	1	....	5	6	33	35	1,648	1,762
Indiana	3	....	....	....	3	....	....	....	....	....	3	1	278	299
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Kansas	14	5	....	2	21	2	2	....	6	8	31	45	1,503	1,512
Kentucky	9	....	....	2	11	1	....	....	3	3	15	....	547	717
Louisiana	18	1	....	10	29	....	1	....	3	4	33	29	934	677
North Louisiana	9	1	....	2	12	....	....	....	3	3	15	13	377	249
South Louisiana	9	....	....	8	17	....	1	....	....	1	18	16	557	428
Michigan	12	1	....	4	17	....	....	1	7	8	25	18	687	604
Mississippi	4	....	....	....	4	....	....	....	3	3	7	7	336	180
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	45	38
Montana	4	....	....	....	4	....	1	....	....	1	5	10	215	298
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	3	15
New Mexico	4	....	....	1	5	....	1	....	....	1	6	10	375	361
New York	15	....	10	....	25	....	....	....	....	....	25	25	1,004	1,110
North Carolina	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Ohio	7	....	....	....	7	....	....	....	....	....	7	14	867	878
Oklahoma	40	3	....	11	54	3	....	....	....	....	57	47	2,063	1,609
Pennsylvania	27	2	15	2	46	....	....	....	....	....	46	46	2,583	2,710
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	3	9
Texas	78	35	3	14	130	1	8	....	28	36	167	160	6,473	5,400
E.Tex.Bor. Co.'s	....	4	....	....	4	....	....	....	....	....	4	9	107	30
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	....	4
Rest of E. Texas	5	....	....	....	5	....	....	....	2	2	7	7	214	246
North Texas	20	....	3	6	29	....	....	....	10	10	39	34	1,569	1,232
W. Central Tex.	5	....	....	3	8	....	....	....	4	4	12	11	418	367
West Texas	23	9	....	1	33	....	3	....	3	6	39	31	1,537	1,416
Tex. Panhandle	2	21	....	....	23	....	....	....	....	....	23	8	547	273
G. Coast, Upper	8	1	....	....	9	....	2	....	2	4	13	14	625	527
G. Coast, Lower	14	....	....	4	18	1	3	....	4	7	26	31	942	812
Southwest Texas	1	....	....	....	1	....	....	....	2	2	3	13	430	400
S. Central Tex.	....	....	....	....	....	....	....	....	1	1	1	2	84	93
Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Washington	....	....	....	....	....	....	....	....	....	....	....	....	1	....
West Virginia	3	8	....	6	17	....	....	....	....	....	17	19	710	850
Wyoming	5	1	....	....	6	....	1	....	....	1	7	8	170	150
Total U.S.	292	58	29	57	436	7	17	1	62	80	523	511	22,608	21,259

* Includes distillate wells. † Includes salt water disposal wells.

tween 4378-90 feet, oil rose 2400 feet in the hole in 12 hours. It was then acidized with 1000 gallons and the well flowed 35 barrels of oil in the first hour. The well picked up the Arbuckle formation 177 feet higher than a well 980 feet southeast.

Meade County: Stanolind Oil and Gas Company's H. C. Adams 1, SWc 7-35s-29w, opens a new pool on the 90,000-acre Adams ranch. The well was reported making 75 barrels of oil a day on the pump with some water from Mississippi lime between 6230-68 feet. Earlier this year Stanolind opened a gas pool on the ranch which may prove one of the biggest structures in Kansas.

Ellsworth County: Nadel and Gussman of Tulsa have extended the Stoltenburg pool ½ mile northwest with the completion of Haska 1, SW NW SE 5-16n-10w, for a state potential of 1139 barrels of oil per day. Production is from Arbuckle lime between 3323-27 feet. The well filled up 3000 feet of oil in 10 hours and got its potential on a pumping test.

Ellis County: Sunray Oil Corporation was preparing to test an oil show at Lang 1, NE NE SW 4-14s-17w, semi-wildcat northwest of the Toulon pool. Top of the Kansas City lime was logged at 3294 feet and the Arbuckle lime was had at 3538 feet with shows reported in the Arbuckle. The test will be drilled in with cable tools.

☆ New Mexico

Lea County Paddock Field Gets Eastward Expansion

Paddock field expanded east with new producing area; Skaggs deep area has first failure; Lea County wildcat fails to respond to acid.

Lea County: Neville Penrose, Inc.'s Jones 1, northeast offset to a Glorietta pumper in the Paddock field, scored first production from the basal Yeso in flowing 912 barrels of 38-gravity oil potential through ½-inch choke after acidizing with 8000 gallons through perforations at 7040-7160 feet. Pay zone was logged from 7020-7192 feet. It is 4 miles north by west of nearest production in this horizon. The Texas Company's Lockhart 2 missed the Yeso pay, and is showing for a small producer from Glorietta perforations at 5560-5610 feet.

Carl B. King et al's Santa Fe Railroad 1, C NE NW 29-9s-37e, northeastern Lea County wildcat, was scheduled to deepen after swabbing dry following acid treatment of broken saturation in the San Andres at 4945-65 feet.

Continental Oil Company et al's Skaggs 1-B, northwest offset to the 7700-foot discovery for the Skaggs field, was abandoned at 8510 feet in Devonian, topped at 8290 feet.

Majority of the operators participating in the Maljamar field repressuring project, Lea County's first extensive secondary recovery unit, voted to proceed with the enlargement of the plant to 5 million cubic feet daily and to drill 30 gas-input wells within the next 2 years. Emery Caper, chairman, presided at a meeting in Artesia on November 6 and 7. The plant will be changed from compressor to absorption type, and a 50 percent gain in products is anticipated.

☆ West Texas

Andrews Simpson Producer Gets Official Potential

Official potential taken of Andrews County's first Simpson producer, and district's record-depth discovery in Gaines County; Ector County prospect is failure in Ellenburger; thick pay section points up Ellenburger reserves in TXL field.

Andrews County: Humble Oil & Refining Company's Parker 1, southwest offset to the Clear Fork discovery in the Martin pool, flowed 577 barrels of 42.3-gravity oil, with gas-oil ratio of 630/1, on potential test through ½-inch choke from perforations at 8700-50 feet and 8775-90 feet in the Simpson (McKee) sand, topped at 8700 feet. It was plugged back from water in the Ellenburger at 9030-72 feet, and probably could be dualy completed from the Silurian. Rig has ben skidded ½-mile east to drill Parker 2, which will explore the Ellenburger.

Hockley County: Stanolind Oil & Gas Company's Wiley 7, northeast edge of the Slaughter field, an experimental test with lateral drainage, failed to register a gain in production in pumping 31 barrels of oil the first 24 hours, with the fluid column rising only 11 barrels when shut in for 24 hours. It is carrying 102 feet of open hole in the San Andres, with 7-inch casing cemented at 4832 feet, and 7 lateral holes, aggregating 121 feet, were drilled near the 4927-foot level. Other companies assigned engineers to observe this experiment. If it is successful in boosting the output and ultimate recovery, many second and third-rate lime producing areas in the district would be given lateral drainage.

Gaines County: Amerada Petroleum Corporation's Jones 1-A, discovery for the Jones Ranch area and 4¼ miles southwest of the Yoakum County sector of the Wasson field, flowed 1014 barrels of 43.5-gravity oil and 362 barrels of salt water, with gas-oil ratio of 284/1, on 24-hour completion test through 1¼ inch choke. This discovery is producing from perforations at 11,181-284 feet and 1,380-422 feet in Devonian, topped at 11,181 feet. It is the deepest producer in the district. An analysis of the water shows 23,000 parts per million of chloide. Comparatively little water, which was considered fresh, appeared from the above zones in the Devonian before the well was bridged back in an unsuccessful attempt to dual complete in the 9100-foot Wolf Camp. Amerada and Argo Oil Corporation each have outposts underway. Stanolind Pipe Line Company is trucking the oil to its Wasson field system.

Garza County: Honolulu Oil Corporation and Devonian Oil Company's Altman 1, offsetting production in the Hitt sector of the PHD pool, cemented 5½-inch casing at 9539 feet after drilling to granite at 9603 feet. Production test will be made of nominal show of gas logged in the Ellenburger, topped at 9160 feet, while the 8900-foot Pennsylvanian will also be tested.

Ector County: Humble Oil & Refining Company's Cummins 1, midway between the Goldsmith and North Goldsmith fields, was eliminated as an Ellenburger prospect in testing 3600 feet of sulphur water from this zone at 9161-9235 feet.

The Texas Company's Connell 29, Ellenburger prospect on the west side of the Penwell field, was drilling dry lime at 8405 feet. A drill-stem test at 8081-8248 feet in Silurian, topped at 7830 feet, yielded 450 feet of salt water.

Stanolind's Williamson 1, northwest edge of the North Goldsmith field, was drilling in Upper Ordovician at 8080 feet without shows that warrant further testing.

Amerada Petroleum Corporation's T. P. Land Trust 1-B, between the 2 Ellenburger producing sectors of the TXL field, flowed 2277 barrels of 44.3-gravity oil, with gas-oil ratio of 820/1, on completion test through ½-inch choke after flushing perforations at 9714-9816 feet with 1000 gallons of mud acid. The Ellenburger was entered at 9698 feet, and drilled to 9825 feet. Potential is based upon 5½-hour gauge, and during this period the flowing pressure on tubing increased from 1000 to 1050 pounds, thus emphasizing the production ability of this zone. This well was completed in 4 months and 27 days.

Shell-Cities Service Oil Company's T. P. Land Trust 1-E, north offset to the TXL field's Ellenburger discovery, flowed 1998 barrels of 42.2-gravity sweet crude initial through ½-inch from 220 feet of Ellenburger pay (open hole) drilled to 9835 feet. The McKee sand, upper Simpson, is destined to be a source of oil production in the south portion of the Ellenburger area, as Phillips Petroleum Company's T. P. Land Trust 2-A tested 3000 feet of 42.8-gravity oil at 8959-9146 feet in Simpson, topped at 9020 feet.

☆ West Central Texas

Ellenburger Discoveries Pending in Two Counties

Ellenburger discoveries pending in Eastland and Stephens counties; Nolan County bids for first commercial production; southeastern Haskell County has prospective strike.

Eastland County: Kerlyn Oil Company's Harrelson 1, C NE SW H&TC Ry. 101, Block 3, 1½ miles northeast of Nimrod and 2 2/3 miles from production, gives promise of becoming an important discovery through having filled 2000 feet with oil from dolomite saturation at 3813-15 feet in Ellenburger, topped at 3783 feet. Pipe will be landed before deepening. This wildcat attracted attention in developing a flow of 4,750,000 cubic feet of gas at 3269-94 feet in Marble Falls, topped at 3257 feet with elevation of 1656 feet. This gas zone was cased off. The Bend was entered at 2785 feet. It is on a regional high extending northwest from the old Hilburn field, and is considerable higher structurally than Barnsdall Oil Company's Brown 1, a 4010-foot failure ⅝-mile northwest.

Stephens County: W. R. Skeen et al's Hatchet 1, near C NW SW Sec. 33, Orphan Asylum lands and 1⅞ miles northeast of the Loving pool, flowed 20 barrels of oil and 2 barrels of water hourly from perforations at 4215-18 feet. This production is from Ellenburger, topped at 4180 feet with elevation of 1216 feet.

Nolan County: Sohio Petroleum Com-

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pany's Faver 1, C NW NW T&P Ry. 50, Block 21, and 5 miles east by south of Sweetwater, logged additional broken pay after coring to 5692 feet. This wildcat entered the Strawn at 5661 feet with elevation of 2125 feet. A drill-stem test at 5670-82 feet yielded gas to the surface immediately, and the well headed while pulling drill pipe. The remaining fluid recovered consisted of 180 feet of oil-and gas-cut mud and some salt water. It is on acreage farmed out by Hunt Oil Company from a big block.

Haskell County: Fred M. Manning, Inc.'s Adair 1, NW NW NW H&TC Ry. 7, Block 3, bailed 39-gravity oil from saturated-lime at 3218-20 and 3249-50 feet in Palo Pinto, topped at 3218 feet with elevation of 1505 feet. Water appeared immediately below the second sand, and the test was drilling at 3265 feet with 600 feet of fluid in hole.

☆ North Texas

Young County Well Flows Wild from Mississippian

Young County well credited with flow of 300 to 500 barrels of oil hourly while flowing wild from Mississippian; north extension to Hildreth field has been partially defined; second producer assured for Belcherville area, Montague County.

Young County: L. T. Burns' Kunkel 1, south offset to his recent Crain pool discovery and 2½ miles southwest of Olney, flowed wild for 24 hours due to loss of circulation while drilling the Mississippian pay zone at 4890-99 feet. The flow was killed with high-pressure pumps and commercial mud-weighting mixture. Production was estimated at 300 to 500 barrels hourly. Kunkel 1 is about 42 feet high, and the pay was entered with only 100 feet of surface pipe in the hole, making it impossible to control the flow when circulation failed.

Montague County: Venmex Oil Company et al's Grant 1, ½-mile northwest of its recent Bend conglomerate discovery at 5346-56 feet in the Belcherville area, was assured of production when a drill-stem test at 5338-54 feet yielded gas to surface within 4 minutes with a recovery of 2250 feet of oil and 20 feet of mud. Pipe has been cemented at 5594 feet, or 4 feet off bottom to complete through perforations. The partnership has staked T. M. Jordan 1, and continuous development is planned.

A. R. Dillard et al's Lawson 1, north offset to the recent 2½-mile north extension given the Hildreth field, dipped sharply and tested dry at 6161-69 feet. Another test was to be made at 6176 feet. Lawson 1 precipitated a substantial drilling program on intermediate acreage in registering a potential of 1836 barrels through ½-inch choke from Bend conglomerate perforations at 5992-6010 feet.

Grayson County: Standard Oil Company of Texas has cleared location for it projected 11,000-foot Ellenburger test on northwest side of Sherman. Location is 680 feet from the northwest and 960 feet from the southwest lines of the A. G. Mitchell 83-acre tract, J. B. McAnair survey. The company is credited with having spent in excess of $170,000 for its 20,000-acre block, which was taken on geophysical information.

Sivells Bend: Sun Oil Company has authorized 2 new locations, including Dora L. Midkiff 1, Sol Gann survey and 746 feet east of its Allen 1, which indicated a new pay in flowing oil and water from perforations at 6280-6300 feet. This zone has been squeezed, and will be reperforated. The company's Field 2 will be 1076 feet north by west of the most southerly and best producer in the field.

☆ East Texas

Record Depth Gas Strike For Texas Is Registered

New record-depth gas production for Texas found in Chapel Hill field; Calvert field extended into Milam County by gasser; first sub-Clarksville production in Quitman field; Smackover prospect in Falls County making production test:

Smith County: Sinclair Prairie Oil Company's Shofner 1, Chapel Hill field, tested 300,000 cubic feet of high-pressure gas daily through 1¼-inch tubing landed at 13,397 feet inside of drill-pipe stuck on botom at 13,577 feet. Pressure on tubing built up to 4450 pounds and 3900 pounds on drill-pipe after being shut in for 12 hours. This projected Smackover test encountered high-pressure formation and began losing circulation simultaneously at 13,360 feet in sandy-dolomite. However, the original gas was pronounced non-inflammable. Drill pipe became stuck with bit on bottom at 13,577 feet in unidentified formation. The stem was cut at 13,484 feet and again at 13,403 feet, but could not be pulled. Participating companies elected to cement the stem and make a long-shot try for production.

Calvert Field: Hamman Oil & Refining Company extended the field across the Brazos River into Milam County and registered the first gasser when F. W. Patzke 1, D. Ghallager survey, tested 3½ million cubic feet initial through ⅛-inch choke from Basal Nacatoch sand at 2019-30 feet. The gas is dry, and recorded closed in pressure of 650 pounds. The company's Garrett 1, ½ mile south extension for the Robertson County sector of the field, pumped and flowed 43 barrels of 36-gravity oil initial from sand at 2114-24 feet, while Garrett 2, situated 950 feet southeast, was heading 50 barrels daily from sand at 2145-52 feet, giving the area a total of 10 pumping and flowing wells.

Henderson County: Delta Drilling Company's Hurt & Miller 1, 2 miles northeast of Poyner, registered low structural position and was awaiting orders in Woodbine at 5204 feet.

Wood County: Shell Oil Company's Harris-Atlatl 1, Paluxy failure offsetting the most southerly producer in the Quitman field, established new shallow pay in pumping 120 barrels of 23-gravity oil daily from Sub-Clarksville perforations at 4126-40 feet. It was drilled to 6700 feet in the Glen Rose for geological information, then set pipe after side-wall cores in the Sub-Clarksville revealed oil saturation.

Falls County: H. C. Cockburn and Zephyr Oil Company's Buie 1, second deep test for the Stranger faulted structure, set pipe to make production test of Smackover section that was drilled to 7063 feet. The test was ordered after taking sidewall cores.

Panola County: The Ohio Oil Company is reperforating in the wildcat J. O. Britton 1, William Taylor survey, Dotson area, after recovering parted tubing. A 10-hour test previously recovered 2½ barrels of fluid per hour with a good showing of oil of 41.2-gravity through 173 perforations oppostie the prospective pay at 6008-54 feet.

San Augustine County: M. E. Davis has been testing C. Thomas 1, William B. Horn survey, 9 miles northwest of San Augustine and bleeding the well for about 2 barrels of 40-gravity oil along with acid water. The perforations from 8635-50 feet are being tested. An estimated 20 million cubic feet of gas has accompanied the flow of oil. Casing pressure is up to 2285 pounds. Total depth is at 9260 feet. The test is being made in the Pettit lime, topped at 8585 feet, with porosity at 8635 feet.

☆ South Central Texas

Show of Gas Is Logged in Atascosa County Wildcat

Gas show logged in Atascosa County wildcat; Charlotte field well completed; wildcat tests active in Bexar, Kerr and Medina counties.

Atascosa County: Humble Oil & Refining Company's Henry Schorsch 1, Edward Esteda survey, wildcat ¾ mile southwest of Jourdonton, was coring below 7340 feet in Edwards lime. A series of tests at 7277-7329 feet recovered gas-cut mud and condensate.

In the Charlotte field, Humble's A. K. McBride 2 flowed 1,152,000 cubic feet of gas daily through a ¼-inch choke with a tubing pressure of 890 pounds. The well also made some 53.4-gravity condensate. The well is a southwest offset to the Pruitt 1.

Bastrop County: Continental Oil Company's Willie Malina 1, Andrew Graham survey, wildcat 4½ miles north of Cistern, has been abandoned at 9276 feet.

Cage and Messer are reported preparing to drill a 1500-foot wildcat midway between Bastrop and Austin.

Bexar County: Chenoweth & Harroun's Max Blum 1, Rodriguez survey, deep test in the Gas Ridge sector, was drilling below 5375 feet in sandy shale.

Lee County: Humble's George Vick 1, wildcat in the Tanglewood area, was drilling below 3462 feet in sand and shale.

Kerr County: The Ohio Oil Company's Charles J. Robinson 1, wildcat test, was drilling below 5070 feet in hard sand.

Humble Completes Plans for Cutback to 40-Hour Week

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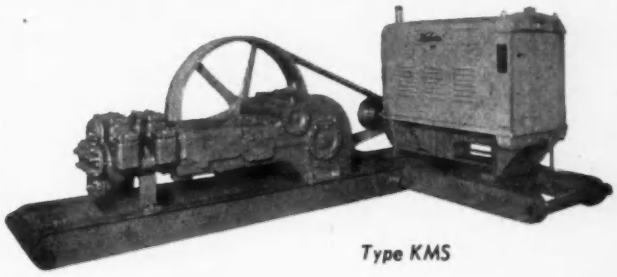

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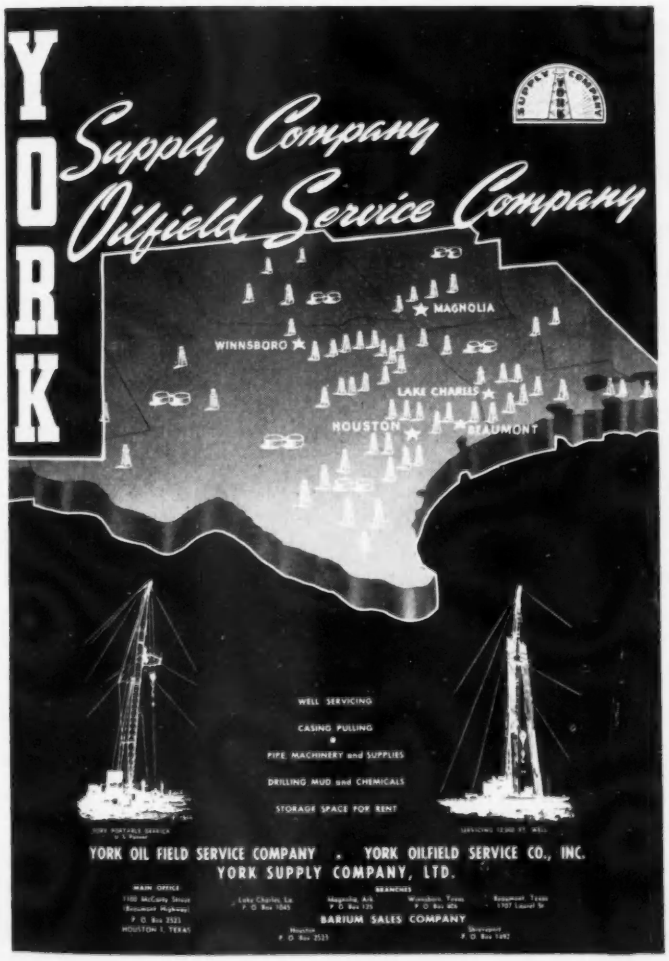

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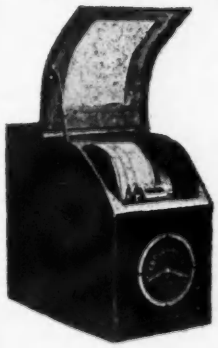

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☆ Southwest Texas

Sun Stakes Webb Wildcat Encinal Project Is Tested

Sun to drill Webb County wildcat; Encinal wildcat recovers gas-cut mud on test; Starr County well completed.

Webb County: Sun Oil Company has staked Isaac Hirsch 1, a wildcat, 26 miles northeast of Laredo. It is on a 2880-acre lease in Survey 2030 and is 1416 feet from a dry hole on the same lease.

East of Encinal, Humble Oil & Refining Company's Mary Kate Eithers 2, Jesus Juarez survey, is drilling below 6598 feet in hard sandy shale after a drill-stem test at 6454-77 feet recovered gas-cut mud.

McMullen County: Plymouth Oil Company's Harry Ezzell 1-A, wildcat 6 miles southwest of Calliham, was drilling below 6500 feet in shale.

Duval County: Glenda Oil Company has spotted Leila Peters 2-A in the Kohler field. It is in the J. H. Gibson survey and is southeast of production.

In the North Government Wells field, Forest Oil Corporation spotted T. W. Horn 2, J. Poitevent survey.

Starr County: Coastal Refineries, Inc.'s B. Solis 3, Garcia field, has been completed for 93 barrels of 45.2-gravity oil daily through a ⅛-inch choke from 3730-35 feet.

☆ Lower Texas Coast

Humble Continues Series of Tests on Willacy Wildcat

Humble continues to test deep Willacy County wildcat; Refugio wildcat is running electric log; Lavaca County wildcat makes gas and condensate.

Willacy County: Humble Oil & Refining Company continues to take production tests at W. S. Murphy 1, wildcat 1 mile north of San Perlita. Last test through perforations at 10,490-496 feet recovered 1560 feet of salt water. No tests have indicated commercial production. Total depth is 11,207 feet with 5½-inch casing set on bottom.

Phillips Petroleum Company's W. S. Livingston 1, wildcat 12 miles northeast of Rio Hondo, was drilling below 10,590 feet in sand and shale.

Refugio County: Blanco Oil Company and Al Buchanan's John J. Power et al 1, wildcat 10 miles north of Refugio and 2 miles southwest of the Gaffney field, is running an electric log at 4750 feet, total depth, after failing to find shows in the Greta zone at 3875-3930 feet.

Lavaca County: Sterling Oil & Refining Corporation's R. H. Goodrich B-1, German Immigration Company survey, 19 miles southeast of Yoakum, was shut in after testing gas and condensate through perforations at 7810-15 feet. Total depth is 11,014 feet. The test was made through a ⅛-inch choke with tubing pressure of 1550 pounds and casing pressure 1950 pounds. This wildcat also is credited with logging sands below 9000 feet.

Nueces County: Hiawatha Oil & Gas Company has staked a wildcat in the Robstown area. It is the Emmett Jones 1 on a 158-acre lease in tract 5, Wallentin Farm Tracts, Gregoria Farias Grant, Abstract 592.

☆ Upper Texas Coast

Stratton Ridge Is Given Shallow Oil Production

Shallow oil production established at Stratton Ridge; new discoveries made in Newton and Hardin counties; Trinity County well reported drilling in Paluxy.

Brazoria County: New shallow oil production has been established on the old Stratton Ridge prospect, 11 miles southwest of Angleton, with completion of Ernest Cockrell's Seaburn Estate Heirs 3, Jared E. Groce, 5 League grant. The well gauged 231 barrels of 25.4-gravity oil daily through a ¼-inch choke from perforations at 3959-66 feet. in sand topped at 3940 feet. Tubing pressure was 510 pounds with the gas-oil ratio being 271/1. The test originally was drilled to 3186 feet and hit the dome at 3123 feet. It was plugged back and sidetracked at 2010 feet and now bottoms at 3970 feet.

Harris County: Magnolia Petroleum Company's Warren Ranch 3, southeast of the discovery well on the southwest flank of Hockley dome, was retesting after recovering 1800 feet of oil and 1980 feet of salt water with 3 pounds working pressure on a drill-stem test at 6252-57 feet.

Humble Oil & Refining Company's Milo 10, in the Tomball field, deepest active test on the Texas and Louisiana Gulf coast, was taking sidewall samples at 14,657 feet.

Newton County: Final completion has been made at Humble's E. C. Hankamer et al 1, Smyth survey, discovery well in the South Call field. The well flowed 80 barrels of 62-gravity condensate daily through an 11/64-inch choke from perforations at 7960-66 feet. Tubing pressure was 2575 pounds. Material is now being moved in for the Hankamer et al 2 about 2640 feet southeast of the discovery.

Hardin County: Pan American Production Company's Olive Sternenberg Lumber Company 1, discovery northwest of the West Silsbee field, was coring after flowing 150 barrels of 44.6-gravity oil daily while making a drill-stem test at 10,049 feet. Working pressure was 2500 pounds.

☆ South Louisiana

Calcasieu Parish Wildcat Being Prepared for Test

Union Sulphur prepares to test Calcasieu Parish wildcat; pipe being set in deep Jefferson Parish wildcat; Cameron Parish tests are spudding.

Calcasieu Parish: Union Sulphur Company's Bordages 1, 5-10s-9w, Hackberry zone wildcat test, is preparing to perforate for completion after plugging back from 8616 feet to 8380 feet. Five and one-half-inch casing was set on bottom.

In the Lake Charles area, Union Sulphur is moving in materials for Krause and Managan 1, 2-10s-9w, which will also test the Hackberry zone.

Jefferson Parish: The Texas Company's State 1, deep wildcat test in East Barataria Bay, has drill pipe stuck at total depth of 14,490 feet and operator is preparing to set a string of 5½-inch casing at 12,500 feet to test shows of gas and condensate between 11,000 and 12,000 feet.

Assumption Parish: Falcon-Seaboard Drilling Corporation's Ed Hebert 1, 10-12s-12e, Napoleonville area, has set 5½-inch liner at 6900 feet for completion with total depth of 7150 feet.

Beauregard Parish: Sun Oil Company's Rice Land & Lumber Company 1, 32-4s-11w, wildcat test in the Singer sector, was drilling below 9315 feet in hard shale and sand. Contract depth is 12,000 feet.

Cameron Parish: Magnolia Petroleum Company is spudding its Lutcher-Moore B-1, north offset to the Lutcher-Moore A-1 discovery well in the Mud Lake field.

Pure and Union Sulphur's Ira Hebert 1, wildcat test in 31-12s-7w, 9000-foot wildcat test, is rigging up to spud.

St. John the Baptist Parish: The Atlantic Refining Company's Lutcher-Moore 3-A, LaPlace field, has been abandoned at 13,477 feet.

Allen Parish: Humble Oil & Refining Company's Mrs. J. A. Bel Estate, wildcat in the Oberlin area, was coring below 12,615 feet in hard sand and shale. Gas sand was picked up at 12,200-230 feet.

☆ North Louisiana

Franklin Test Attempting Elimination of Water

Franklin Parish find attempts to eliminate salt water encroachment; Bossier Parish extension tested.

Franklin Parish: C. W. Sharp's J. H. Baker 1, C SE SE 27-16n-9e, 6 miles south of Delhi, is testing in an effort to eliminate salt water encroachment. Operators recorded flow of 6 barrels of fluid per hour, partly salt water, after running tubing, with flowing tubing pressure of 1200 pounds. Water is believed channeling behind casing and another squeeze job will be run on perforations from 4900-08 feet. The well tested 100 percent salt water when first perforated. Oil is 43 gravity. Total depth is 5864 feet in the Glen Rose, with 5½-inch casing cemented at 4992 feet.

Atlas Oil & Refining Company is already rigging up at Baker 2, C SW SE 27-16n-9e, a direct west offset. Leasing is active.

C. L. Smith abandoned the wildcat McGehee 1, C SW SW 16-11n-9e, at 8491 feet. The test was carried through the Tuscaloosa without showings.

Bossier Parish: Grady H. Vaughn in a late 12-hour test of Katie Odom Padgett 1, C SW NE 1-20n-13w, 1½ mile northwest extension to the Benton field, recorded a flow of 46.3 barrels of fluid, no salt water, accompanied by 514,000 cubic feet of gas, a gas-oil ratio of 11,100/1, from the Cotton Valley Bodcaw sand. No test has been made of the

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Barnsdall Oil Company and Sohio Petroleum Company are drilling below 2315 feet in the wildcat Carter-Burton 1, C NW NW 26-23n-13w, Plain Dealing area. They are below 4870 feet in another wildcat, Crystal Refining Company 1, 28-21n-11w, having entered anhydrite at 4760 feet.

Caddo Parish: Union Producing Company's Noel Estate 1, 11-19n-16w, northwest of Longwood production, is south of shallow Caddo field, below 6080 feet in the Travis Peak, and probably will begin coring at the first break. The test is a prospective Pettit lime pool opener, having recovered 120 feet of oil on a drill-stem test from 5701-16 feet.

Texas Independent Group May Organize Cooperative

A three-point program to meet what it called a serious situation in the oil industry was proposed by the board of directors of the Independent Petroleum Association of Texas at its recent meeting.

The group voted to ask the Senate Petroleum Investigating Committee to investigate a "perpendicular trust" situation with a view of divorcing oil production and pipe lines from refining and sales; favored serious consideration of forming an oil cooperative; and authorized its president, D. Harold Byrd, to request thhe surplus property board of the Reconstruction Finance Corporation to delay any commitment to dispose of war emergency pipe lines until independent oil men can consider the proper use of the lines "for the best good of the country in peacetime."

☆ Arkansas

Drew County Test Staked; Village Field Has Producer

New wildcat is only highlight in decreasing and routine activity; Village field gets new oil producer.

Drew County: C. A. Kinard is moving material at McCauley 1, C NE SW 14-12s-6w. This Paleozoic wildcat test, located on sub-surface geology, its attracting some attention. There are only 11 wildcat tests in Arkansas.

Columbia County: E. G. Bradham's Gunnels 1, C NE NW 14-17s-19w, is a new producer in the Village field, flowing 175 barrels of oil in 24 hours through 9/64-inch choke. Production is from the Smackover through 54 perforations opposite 7362-78 feet. Total depth is 7384 feet, where 5½-inch casing was cemented.

A new test for the Atlanta field was located by Dale Mounth at W. D. Baker 1, C SW SW 12-18s-20w.

Union County: The Atlantic Refining Company's wildcat Goode 1, NW 6-17s-13w, entered the Cotton Valley at 3690 feet and is coring below 4220 feet.

Ouachita County: G. H. Vaughn completed Turner , C SW SW NW 27-15s-18w, Gum Creek field, pumping 25 barrels of oil in 24 hours. Production is from open hole at 2472-79 feet, total depth.

McAlester Fuel Company is building derrick for R. B. Allen 1, C SW SW NE 24-15s-19w, in the Wasson field; and R. H. Crow is moving materials to H. B. Brown A-3, C NE NW NW 18-15s-19w, Stephens field.

Spacing Hearing Called

Robert M. Medill, director of the Illinois department of mines and minerals, has called for a public hearing at 10 a. m. Monday, November 19, in Effingham, on rules and regulations regarding practices and well spacing for McClosky lime wells in the Mattoon pool.

Texas Field Named

The name "Pita" has been given the field discovered by Humble Oil & Refining Company's Sullivan B-1, San Antonio de Encinal survey, Brooks County, Lower Texas Coast.

Fire Damages Refinery

Damage unofficially estimated at $150,000 was sustained at the Skelly Oil Company's refinery at Eldorado, Kansas, following an explosion at a high-pressure still November 7.

☆ Mississippi

Four Successful Field Completions Registered

Four good field completions noted; no new shows reported on Adams County prospect; Warren County prospect abandoned.

Wayne County: Gulf Refining Company's G. S. Stanley 28, NEc SW SE 1-9n-9w, has been completed for a good producer in the Eucutta field. Casing was perforated between 5008-32 feet with 144 shots and well swabbed in. In its initial test it pumped 81 barrels of 25.1-gravity oil per day. Humble Oil & Refining Company's G.M.&O. Ry. B-3, NW NE 3-9n-9w, Eucutta area, was preparing to complete after a production test of the Eutaw zone at 5252-66 feet. Gulf's A. E. Clark 1, NEc SW SE 12-9n-9w, set casing to 5242 feet in the Eutaw and was preparing to test the producing zone. Humble's G.M.&O. B-4, SW SW 3-9n-9w, in Eucutta, has run test on the chalk zone which was topped at 4030 feet. Well is now drilling below 4500 feet with no shows indicated.

Yazoo County: The Carter Oil Company's Susie Ingram 1, SEc 2-12n-2w, wildcat, is drilling below 5992 feet with no shows. Eutaw horizon was topped at 5812 feet and cores taken from that horizon recovered shale and sand. Sohio Oil Corporation's G. & M. Brumfield B-9, NEc NW SW 1-10n-3w, Tinsley field, is undertaking to swab well in from the Perry sand zone after unsuccessful tests of sands down the hole. In last tests casing was perforated at 5410-26 and 5450-58 feet and swabbed, but only salt water was recovered. Sohio's Guy Brumfield A-5, NEc SE SE 2-10n-3w, Tinsley, is drilling below 4137 feet with no shows reported.

Adams County: Roeser & Pendleton-Sohio's Baker-Maier 1, NWc 34-6n-2w, which has had good oil shows in the Wilcox, is drilling below 9342 feet in chalk. Phillips Petroleum Company's Davey 1, 46-8n-2w, Tuscaloosa prospect, is drilling below 8000 feet with no shows

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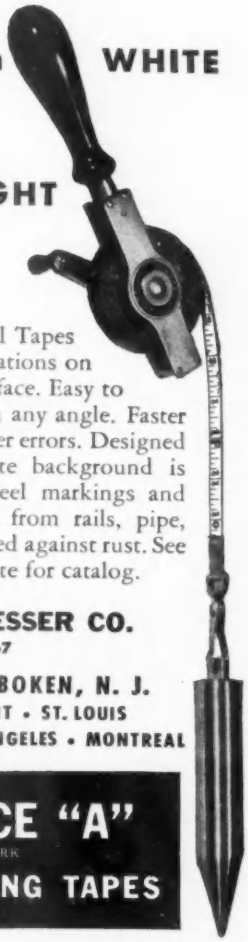

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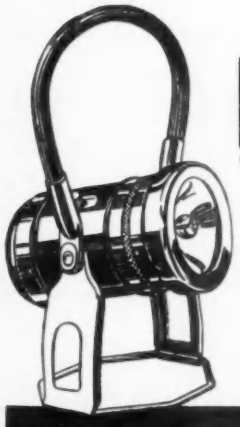

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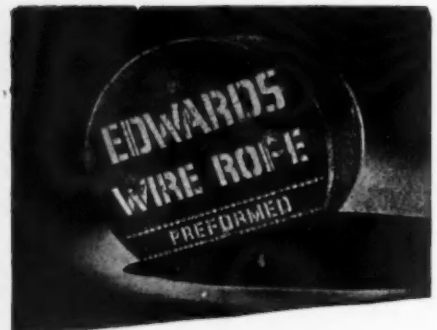

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reported. Gulf's Ella G. Lees 2, SEc 69-7n-1w, Cranfield field, is testing the 10,000-foot zone with no reports of shows. Cores taken at 10,206-240 recovered lignite sandy shale. In the Carthage Point field Humble's Mrs. C. L. S. McKittrick 1, SEc 12-6n-3w, is drilling below 8260 feet in black shale with no shows indicated.

Warren County: Charles H. Osmond's Anderson-Tully Lumber Company 1, NWc 43-13n-3e, wildcat, has been abandoned in salt at 5731 feet with no shows indicated. Frontier Oil Refining Corporation's F. C. Martin 1, NW NW 1-16n-5e, is drilling below 3010 feet with no shows reported. William Helis' Anderson-Tully Lumber Company 1, NEc 40-14n-3e, is drilling surface hole for a test of the 5000-foot zone.

Jasper County: Lyons & Prentiss' C. B. Culpepper 1, SWc NE SE 13-1n-12e, East Heidelberg area, has been completed with an initial flow of 80 barrels of oil per day. Casing was perforated at 5004-16 feet and 5026-32 feet and washed with water. Skelly Oil Company's B. A. Rowell 1, NEc SW NE 13-1n-12e, East Heidelberg, is preparing to test the Morrison sand after a successful test of the Stanley zone in the Eutaw horizon. With casing perforated at 5047-55 feet, well flowed 68 barrels of 21.9-gravity oil in 17-hour test.

Greene County: Humble's Harry Stover 1, NEc 20-3n-7w, wildcat, is drilling below 6178 feet after whipstock job at 5996 feet. The well was originally abandoned in salt at a total depth of 5983 feet, but was reworked later. No shows have been reported from any point.

Lamar County: Gulf's J. M. Andrews 2, SEc 6-1n-16w, Baxterville field, has been completed with an initial production rate of 617 barrels of 15.8-gravity oil and 202,000 cubic feet of gas per day. Casing was perforated at 8710-60 feet with production packer at 8650 feet in the Massive sand zone.

☆ Alabama

Gilbertown Field, Choctaw County, Gets Two Producers

Two producers added to Gilbertown field; new work under way in Alabama and Florida.

Choctaw County: Hunt Oil Company's Land 5, C SE NE 31-11n-4w, has been successfully completed in the Gilbertown field. Initial production was 105 barrels of 20-gravity oil per day. Well was bottomed at 2653 feet. Hunt's Boney 4, C SW NW 32-11n-4w, same field, has also been completed with daily rate on initial effort of 90 barrels of 20-gravity oil.

The Carter Oil Company has spudded Johnson 1, C SW SE NW 4-10n-3w, a proposed Eutaw sand test of the East Gilbertown field, and set surface casing at 170 feet.

Clarke County: Danciger Oil & Refining Company's State of Alabama 1, SE NW 21-5n-2e, wildcat, is drilling below 4050 feet in shale with no shows reported. A show of salt water was found in the Eutaw section.

Mobile County: True Cauble's Boykin 1, NE SE 25-2n-1e, wildcat, is drilling below 7344 feet in shale without shows.

Danciger Oil & Refining Company is rigging up rotary to drill William R. Giesler 1, NE SW 8-4s-2w, for a second test in the county.

Walker County: J. H. Deason's DeBardelaben 1, SE NW 6-14s-5w, wildcat, is drilling at 1320 feet and reaming with no tests run to date.

Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 2, NW SE 32-12s-7w, remains shut down for repairs at 1150 feet.

Florida

The Pure Oil Company is drilling below 583 feet in International Paper Company 3, wildcat in 5-1s-10w, Calhoun County.

Collier County: Humble Oil & Refining Company's Sunniland field test, Gulf Coast Realty Company 6, SW NE 19-48s-30e, is drilling below 320 feet.

Charlotte County: Humble's deep wildcat Lownes-Treadwell A-1, C SW NE 17-42s-23e, is coring at 12,164 feet in anyhydrite with no shows reported.

Highlands County: Humble's G. C. Carleton Estate 1, C SW NE 34-38s-29e, is drilling below 12,189 feet in dolomite. No shows have been recorded.

Monroe County: Gulf Refining Company's State of Florida 1, 2-67s-29e, is below 215 feet in coral after reaming hole. Drillers are losing circulation.

O. D. Robinson's State 1, 29-59s-40e, is drilling out cement at 6447 feet, after cementing cave.

☆ Illinois Basin

Mattoon Pool in Illinois Is Given New Extension

Illinois' Mattoon pool gets new extension; Wayne County has McCloskey lime discovery; Indiana's Gibson County has Aux Vases sand discovery.

Coles County: The Mattoon pool, which already had prospects of development calling for drilling of 2000 wells, was given another extension at B. A. Baker's Bates 1, SW NE NE 12-12n-7e, when the well flowed 1¼ barrels of oil per hour from Aux Vases sand, natural, after plug was drilled. The operator was preparing to shoot the well, which is slightly more than a mile east of M. H. Richardson's Powell, which recently extended the pool 2 miles north. Success of the Bates 1 indicated the entire western half of the city of Mattoon is potential oil-producing territory, since the Powell 1 and the Bates 1 are on the northwestern and northern edges of the city, respectively.

In the Mattoon pool proper, E. P. Jarvis' Jones 1, showed for the largest producer yet drilled in the ffeld, when it began flowing after a shot in Cypress sand and had to be shut in while new and larger lead lines and high pressure equipment was installed. Production may exceed that of J. A. Kull's Craig 1, largest producer previously, which was estimated as capable of 2000 to 2500 barrels daily from Aux Vases sand.

Wayne County: Bell Brothers' Leach 1, C N½ NW SE 9-2s-9e, 3 miles north of the Golden Gate pool, was completed as a McCloskey lime discovery when

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Jefferson County: Gulf Refining Company had a small producing discovery at Purcell 1, 4-3s-4e, when the well pumped 37 barrels of oil and 100 barrels of water in 24 hours from Aux Vases sand.

Randolph County: Operators were moving in equipment for Osteen's Roth 1, 4-7s-7w, a rank wildcat near the historical Kaskaskia settlement on the Mississippi River.

Indiana

Magnolia Petroleum Company's Dike 1, C of SW 25-2s-13w, Gibson County, 3 miles east of the Griffin-Keensburg pool, has been completed as a discovery in Aux Vases sand at 2655-60 feet. Completed on pump, the well made 128 barrels of oil in 24 hours.

Posey County: Magnolia Petroleum Company's Armbruster 2, NW SE SE 14-7s-14w, is showing for a new pay horizon in the Jeffries pool after a drill-stem test in the Waltersburg sand at 1950-60 feet showed 450 feet of oil and 160 feet of oil-cut mud. Operator is drilling ahead. Other production in the pool is from Tar Springs and Cypress sand and McCloskey lime.

☆ Michigan

Sohio Gets Producer in Gilmore Township Block

Sohio has first commercial production in Gilmore Township block, Isabella County; Deep River pool has 5 more successful completions.

Isabella County: Sohio Petroleum Company's Gilmore Gas Unit 2, SE NW SE 26-16n-5w, gauged 1,710,000 feet of gas in Stray sand at 1523-69 feet for the first commercial production in the company's big Gilmore Township wildcat acreage block. However, Sohio's Brassington 1, SE NW SW 25-16n-5w, ½ mile east of the gas discovery, first Dundee oil test in the block, was dry after logging Dundee at 3910 feet and bottom hole at 4091 feet. It will be plugged back to test Stray sand for gas.

Arenac County: Five more large wells ranging in initial natural flow up to 600 barrels per hour have been completed in the prolific Deep River pool as active operations jumped to 31. Production is from Dundee dolomite between 2700 and 2850 feet. The field has been established on a 5-mile southeast area but it averages less than ½ mile wide.

Osceola County: Lupher Drilling Company's Kessinger 2, SE SW NW 5-18n-10w, west offset to the Ahston pool discovery, logged Traverse at 2944 feet and showed 300 feet of water cut oil at 2969 feet. It will be deepened to test the Monroe at 3600 feet.

State Lease Sale: Operators leased 15,804 acres at a bonus price of $7433 at the November 5 auction conducted by the Lands Division of the Department of Conservation in what probably will be the last sale of state leases in 1945.

The average price of 47 cents an acre was the lowest in two years and compared to a high for the year of 94 cents at the January sale. The November sale included one 40-acre tract, classified as proven, which brought only the minimum $1 bid.

☆ Rocky Mountain Area

Fast Time Made In Drilling Cat Creek, Montana, Well

Fast time set in drilling Schrock-Fifer 2, Montana; other Cat Creek operators rush operations to test Ellis sand; J. J. Zorichak named field engineer by Rangely field, Colorado, operators; deep test staked in southwest Wyoming.

Montana

In just 77 hours the Taylor rotary drilling rig brought in Cat Creek's second producing well in the Ellis sand, the Schrock-Fifer 2, Petroleum County. It is understod the flow compares favorably with that of the discovery well, which is flowing 265 barrels of 51-gravity oil per day.

Rotary is being rigged up for the first of many deeper wells the Continental Oil Company is expected to drill in the area. Continental is the field's largest operator and also owns the pipe lines serving it.

Among the old wells drilling deeper as a result of the Schrock discovery is Dunlap-O'Dea 5A, which produced from the second of Cat Creek's 3 shallow sands at 968 feet. Ellis production at Schrock-Fifer 1 is from 1394 feet.

Operations in most Montana fields were at a minimum during the week because of a severe cold snap that dropped temperatures below zero.

Colorado

The California Company brought in a producer for 490 barrels daily and prepared to make a second completion. The Texas Company's Carney 3-34, Rio Blanco County, spudded as the latest Rangely field test. Operators in Rangely field have formed a group which has hired as field engineer J. J. Zorichak, consulting engineer and geologist. Studies and recommendations to be made by Zorichak will be directed toward most efficient development of the new field. Formerly a consulting engineer at Tulsa, Zorichak was a technologist with PAW with headquarters in Denver.

Wyoming

Continental Oil Company is rigging up its McCrary No. 36 in the Big Muddy area, Converse County, where Continental wells Glenrock Sheep 31 and Elkhorn 14 were listed among the week's successful completions.

Niobrara County: In the Lance Creek and Little Buck Creek areas, Continental has staked Apex 4, Well 13. Continental's No. 12 is nearing completion and its nearby Cordell B, 1 is drilling after setting 13½-inch casing at 162 feet.

Uinta County: Mountain Fuel Supply Company is rigging up a rotary to test all sands to the granite or 15,000 feet, if necessary, a few miles east of Evanston. Mountain Fuel's gas line from Baxter Basin to Salt Lake City goes by the new well, which is in 8-16n-112w.

Gasoline Plant Planned

A gasoline plant will be built at once by General Petroleum Corporation near Burrell in Fresno County, California. Plant will cost about $2 million, the Company states, and will have a capacity of 30 million cubic feet. Completion is scheduled for January, 1946.

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☆ California

Rio Vista Gas Well Is Good For 14 Million Cubic Feet

Amerada's Rio Vista gas well is good for 14 million cubic feet; Cymric outpost well fails to find production, another tests wet; Lost Hills wildcat produces only hot salt water on test; tideland exploratory well at Seal Beach, abandoned year ago, to be redrilled; Palomo well swabbing for production.

Solano County: Amerada Petroleum Corporation completed Drainage District 5, Rio Vista gas field, 30-4n-3e, for 14,230,000 cubic feet from perforated interval at 5325-90 feet through a 40/64-inch choke. Shut-in pressures are 2112 pounds tubing and 2113 pounds casing.

Honolulu Oil Corporation and Barnsdall Oil Company's joint test in the Rio Vista area, Liberty Farms 2 in 12-5n-2e, is coring at 4506 feet in dark gray sand.

Sacramento County: Amerada et al completed Weinzheimer 1 in the Thornton area in 34-5n-5e as a dry gas well. Well was shut in without making a flow test. Production is from the interval 3342-62 feet. Shut-in pressures are 1366 pounds tubing and 1360 pounds casing.

Kern County: Increased activity in the Cymric field was evident with Standard Oil Company of California staking 2 more wells on its Weston lease. Weston 24-26 in 26-29s-21e found the Anderson-Weston and Main Carneros zones wet and is standing plugged at 3300 feet. Total depth in 3660 feet. Northwest of the main Cymric field, Independent Exploration Company's Oceanic 1, a new sand discovery in 22-29s-21e, is producing 300 barrels of 37-gravity oil from 4700 feet. Company has a second well down 3300 feet in Sect. 21, the outcome of which may give some idea of the extent of the discovery. Standard of California will shortly abandon its Cymric outpost test in 24-29s-21e, Fitzgerald 55, which went to 5647 feet without showings.

Standard of California's Lost Hills deep test, Cahn 58-4 in 4-27s-21e, produced only hot salt water and 50,000 cubic feet of gas on a test of the interval 8650 to 8660 feet. Operator will test higher. Total depth is 11,080 feet.

At Paloma, Hogan Petroleum Company's Symons-Two 27-7 in 7-32s-27e, is swabbing for production. Total depth is 11,753 feet.

Fresno County: The Superior Oil Company's Sample 61-25 in 25-17s-18e, Lanare field outpost, showed no fluid on a test of gun-perforated interval 8677-88 feet. The same interval was reperforated but again showed no fluid rise during swabbing.

Los Angeles County: Marine Exploration Company is preparing to redrill the abandoned Gilco, Inc., State 1, tideland test at Seal Beach. Old depth was 7025 feet with drill pipe stuck on bottom and recovered to 3000 feet. The hole was 60 percent off vertical on bottom. Jergins interests are again interested in the projects, Allen Jergins being president of Marine Exploration Company.

Shell's deep test in the Long Beach field, Alamitos 48-A, is again fishing for drill pipe with top of the fish at 2390 feet. Total depth is 14,875 feet.

Seaboard Oil Company's Los Angeles City wildcat, L. A. Brick 1 in 21-1s-13w, is recementing for another test of showings at 1770 feet. The first test was wet. Well was drilled to 7505 feet and probably will be abandoned if present test of uphole interval is unsuccessful.

Coast Geologists Elect

Officers of the Pacific Section of the American Association of Petroleum Geologists elected for the 1946 term are E. Robert Atwill, Union Oil Company, president; Vincent W. Vandiver, Seaboard Oil Company, vice president; and A. S. Holston, Tide Water Associated Oil Company, secretary-treasurer.

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☆ Canada

Madison Objective Entered By Deep Brazeau Project

Deep Brazeau test in Alberta Foothills reaches Madison within 100 feet of seismograph estimate; water at west flank Jumping Pound test narrows oil prospects; Socony-Vacuum takes 170,000 acres in South Foothills; 430,000 acres added to Central Plains reservations; California-Standard starts new Southeast Princess wildcat.

Home-Brazeau Syndicate 1, 1sd 5 17-43-17w5, key wildcat near the crest of the big Brazeau Anticline in the Central Alberta Foothills, has confirmed Madison limestone objective at 9498 feet, about 100 feet higher than was estimated. Madison elevation is 5023 feet subsea. Located on the basis of subsurface data from an old 8728 feet above-Madison abandonment ½-mile southwest, geological work by Dr. J. O. G. Sanderson and others, and seismograph survey run by Heiland Exploration for Shell Oil, close logging of the well appears to confirm predrill structure interpretation. Drilling has halted at 9521 feet, 23 feet in lime, and 7-inch casing was being set. Completion in lime is expected about the end of November. The well is backed by independents Home Oil and Anglo Canadian and majors Imperial Oil, Shell of Canada, Socony-Vacuum and Standard Oil Company of California, who jointly hold 176,000 acres dominating the anticline and adjacent area.

Shell Oil of Canada 10-14-J, 1sd 10 14-25-5w5, west flank test on the Jumping Pound Anticline in the South Alberta Foothills, encountered salt water plus a small amount of gas in a drill-stem test of 100 feet of porosity in the Madison limestone, considerably narrowing oil and gas prospects for this structure. The well is ⅝-mile southwest and 1018 feet lower structurally than Shell's 4-24-J, gas well completed last December. No. 10-14-J is being abandoned at a total depth 10,898 feet.

Socony-Vacuum Exploration Company has taken up 170,600 acres of Crown oil and gas rights in the South Alberta Foothills, and will place a seismograph in the field next spring. The block is south of the Turner Valley field, in Twps. 11 and 14 Rges. 1 to 3 west 5.

Four more Crown reservations, totalling 430,752 acres, have been taken up on the Central Alberta Plains. Linking on to reservations granted earlier in the year, they complete a solid block running northwest from the Saskatchewan Border in the vicinity of Provost for about 130 miles to the vicinity of Camrose. The Viking and Kinsella gas fields and the Wainwright oil field are north of the strip.

Imperial Oil Ltd. has 2 of the new reserves, totalling 292,752 acres, one linking the 340,000 acre reserve taken out in July by Imperial-subsidiary Foothills Oil & Gas and a 158,000-acre Imperial reserve also taken in July, the other tying on to the northwest of the earlier Imperial block.

George Maxwell Bell, Calgary newspaper publisher and oil operator, has taken up the other two reservations, totalling 138,000 acres, and tying on to the west of the new most northwesterly Imperial block.

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EXPLORATORY COMPLETIONS

ARKANSAS WILDCATS

Sebastian County—Failure: Vincent R. Trabucco's E. M. & Bertha Tucker 1, c n½ nw sw 36-5n-31w, abnd 1802 ft.

Union County—Oil Discovery: R. C. Wallingford's Union Saw Mill 1, c se nw nw 13-18s-13w, 500 gals acid, pump 8 bbls, td 2378 ft.

Union County—Failure: R. C. Wallingford's Wineman 1, c nw sw se 13-18s-13w, abnd 3050 ft.

CALIFORNIA WILDCATS

Orange County—Failure: D. D. and Dorothy Dunlap's Aldrich Land Co. 2, 18-6s-10w, West Newport Beach area, abnd 3021 ft.

Los Angeles County—Failure: O'Kane & Brain's O'Kane-Brain-Barnsdall 1, 17-5n-16w, Castaic area, all tests wet, abnd 3184 ft.

Kern County — Failures: B. C. Morrison's Mountford 2, 18-27s-19e, Shale Hills area, abnd 3004 ft.

Tide Water's Carver 41, 19-25s-28e, Jasmine area, Pyramid Hills 1450 ft, Vedder 1618 ft, Granite 1763 ft, abnd 1803 ft.

Trico O&G Co.'s Olcese 3, 17-28s-29e, Round Mt. area, Vedder 2310 ft, abnd gray sd 2342 ft.

COLORADO WILDCAT

Rio Blanco County — Oil Discovery: Calif. Co.'s Gray 10, se ne 24-2n-103w, Rangely area, flow 496 bbls, td 6462 ft.

ILLINOIS WILDCATS

Clinton County—Failure: Paul Moseback's Myer 1, sw nw sw 18-1n-3w, Cyp 957-72 ft, pump 6 bbls, abnd 967 ft.

Coles County—Failure: A. M. Meyers et al's Wilson 1, sw sw sw 15-11n-7e, abnd 2325 ft.

Madison County — Failure: Lesing Alch's Mick 1, ne se ne 29-4n-7w, abnd 2306 ft.

Marion County — Failure: Paul Doran's Wharton 1, nw sw nw 12-6n-4e, abnd 2485 ft.

Richland County — Oil Discovery: Central Pipe Line's Bunn 1, ne sw sw 28-3n-14w, McCl 3118-20 ft, pump 48 bbls, td 3132 ft.

Wayne County — Failure: Nation Oil's Vaughn Est. 1, ne ne sw 1-3s-7e, abnd 3532 ft.

KANSAS WILDCATS

Barber County—Failure: Lion's Lemon 1-D, se nw ne 16-30s-13w, Lans 3907 ft, Miss 4369 ft, Simp sh 4579 ft, Arb 4656 ft, abnd 4737 ft.

Marion County—Failure: Tom Palmer's Batt 1, ne ne ne 20-19s-4e, Misener dol 2624 ft, Vi 2627 ft, abnd 2668 ft.

McPherson County—Oil Discovery: Sharon Drlg. Co.'s Crowther 1, nw sw nw 24-18s-1w, Miss 2829-34 ft, flow 1790 bbls oil, 25% wtr, td 2845 ft.

Rush County—Failure: Great Lakes Carbon Co.'s Kottal 1, nec 9-18s-17w, Lans 3258 ft, Reagan 3593 ft, Gran 3610 ft, abnd 3611 ft.

Russell County—Failure: J. M. Huber Corp. et al's Karst 1, nec 31-15s-14w, Lans 3079 ft, Arb 3359 ft, abnd 3390 ft.

Sedgwick County — Oil Discovery: J. P. Gaty's Stollie 1, sw se sw 22-26s-2e, Miss 2896-2910 ft, phy pot 467 bbls oil, 153 bbls wtr, td 2910 ft.

Sumner County — Failure: El Dorado Ref. Co.'s Damitt 1, nw ne nw 13-33s-2e, Miss 3253 ft, abnd 3316 ft.

Thomas County—Failure: Texas Co.'s Fed. Land Bk. 1, sw ne sw 7-8s-35w, Cher 4680 ft, Cong 4770 ft, Miss 4772 ft, Arb 5126 ft, abnd 5226 ft.

KENTUCKY WILDCATS

Henderson County—Failures: J. E. Bauer et al's Whitledge 1, 4-O-23, abnd 2680 ft.

Ashland et al's Sowards 2, 14-P-21, abnd 2078 ft.

Union County—Oil Discovery: Ryan Oil Co.'s Greenwell 1, 17-P-20, Cyp 2339-50 ft, pump 210 bbls, td 2350 ft.

NORTH LOUISIANA WILDCATS

Caddo Parish — Failure: H. C. Owens' Thomas Crichton, Tr. 1, ne 1-20n-8w, elev 306 ft, L. Cret 3325, Hill 3430, Gloyd 3558, Sligo 4113, Pettit porosity 4200, Travis Peak 4362, sso Cotton Valley 6530-40, abnd 7015 ft.

De Soto Parish—Failure: Kerlyn Oil Co.'s Frost Lbr. Co. 1, c ne sw 7-11n-12w, Pettit 5930, Travis Peak 6438, abnd 6702 ft.

Natchitoches Parish — Failure: Calif. Co.'s W. S. Lee 1, 18-13n-7w, elev 155 ft, abnd 3197 ft.

SOUTH LOUISIANA WILDCAT

Cameron Parish—Mud Lake Distillate Discovery: Magnolia's Lutcher 1-A, 2300 n 2000 e of swc 32-14s-11, pay 10,652 ft, perf 48 shots 10,652-48 ft, flow 48 bbls 59.5-gr, 12 bbls wtr, 1212 bbls sw, 10/64-in, gor 42,604/1, tp 3100 lbs, td 11,923 ft.

MICHIGAN WILDCATS

Genesee County—Failure: Michigan Oil Co.'s Woodward 1, se se se 10-9n-5e, abnd 1751 ft.

Hillsdale County — Failure: C. A. Perry's Wright 1, se nw nw 9-5s-4w, abnd 1630 ft.

Isabella County—Failure: Sohio's Vodicka 1, se se se 17-14n-3w, Dundee 3748 ft, abnd 3805 ft.

Gilmore County—Gas Discovery: Sohio's Gas Unit 2, se nw se 26-16n-5w, Stray sand 1523 ft, flow 1,710,000 ft, td 1569 ft.

Muskegon County — Failure: Muskegon Oil Corp.'s Haywood 1, ne nw nw 36-12n-16w, Traverse 1886 ft, abnd 1967 ft.

Oceana County — Failure: C. W. Teater's Ryan 1, s½ nw nw 16-16n-16w, Traverse 1824 ft, abnd 2719 ft.

MICHIGAN OUTPOSTS

Arenac County—Deep River Failure: Michigan Oil Co.'s Herzberg 1, sw sw sw 7-19n-4e, Dundee 2815 ft, abnd 3100 ft.

Isabella County—Coldwater Failure: Union Drilling & Producing Co.'s Conley 1, sw ne sw 23-16n-6w, Dundee 3862 ft, abnd 3948 ft.

MISSISSIPPI WILDCATS

Issaquena County—Failure: Hunt Oil Co.'s M. B. Nicholdson 1, nwc 27-13n-9w, jkd & abnd 6872 ft.

Newton County — Failure: Sun's Citizens Nat'l Bank 1, c sw ne 23-5n-13e, Wilcox 342 ft, Eutaw 3318 ft, Tuscaloosa 3680 ft, Massive sd 4760 ft, abnd 8336 ft.

Warren County—Failure: Chas. H. Osmond's Anderson-Tully Lbr. Co. 1, nwc 43-13n-3e, abnd 4407 ft.

MONTANA WILDCAT

Petroleum County—Oil Discovery: Schrock's Fifer 2, se nw nw 21-15n-30e, flow oil, no gge, Ellis 1392 ft, td 1403 ft.

NEW MEXICO NEW PAY TEST

Lea County—Paddock Deeper Discovery: Neville G. Penrose's Jones 1, c sw sw 6-22s-38e, ne offset to 5200-ft Glorietta prod, elev 3360 ft, anhy 1252 ft, salt 1370-2448 ft, flow 912 bbls 39-gr oil (sweet) via ½-in, 8000 gals acid Basal Yeso perf 7040-7160 ft, td 7205 ft.

WEST TEXAS WILDCATS

Crockett County — Failure: Lion Oil Co.'s Neal 1, 1980 ewl 660 nsl E. L. & Ry. Co. 66, blk BB, elev 2613 ft, Yates (frosted) 1480 ft, brown li 2280 ft, San Andres 2200 ft, abnd 7429 ft.

Kent County—Failure: Sohio's Bert Wallace 1, c sw nw H&TC Ry. Co. 55, blk 98, elev 2097 ft, anhy 1735 ft, abnd 7278 ft.

Midland County—Oil Discovery: Humble's Buchanan 1, 660 ewl 1980 snl Wm. Baldridge sur 32, 9 mi se Midland, 1st prod for county, elev 2699 ft, anhy 1630 ft, Yates 2520 ft, San Andres 4250 ft, Devonian 11,410 ft, Simpson-Ellenburger contact 12,170 ft, flow 270 bbls 45.7-gr oil, 32 bbls wtr, gor 4350/1, via 11/32-in, acidized Pennsylvanian perf 10,370-10,390 ft, td 12,574 ft, pb 11,700 ft.

Terry County—Failure: Hugh Corrigan-Joe Crump's Nystel-Texaco 1, c sw sw PSL 8, blk C-38, elev 3169 ft, anhy 2080 ft, Yates 2950 ft, brown li 3950 ft, San Andres 4440 ft, abnd 5255 ft.

WEST TEXAS OUTPOST

Andrews County—Fuhrman-Mascho Extension: Stanolind-Continental-Superior's University 1-R, c se se sect 5, blk 9, 1½ mi se prod, elev 3201 ft, anhy 1860 ft, Yates (grains) 3000 ft, San Andres 4410 ft, Holt 5475 ft, pump 104 bbls 28-gr oil, 14 bbls wtr, Grayburg-San Andres perf 4340-4466 ft, td 5539 ft, pb 4582 ft.

WEST TEXAS NEW PAY TEST

Andrews County—Martin Deep Discovery: Humble's J. E. Parker 1, c nw ne PSL 24, blk A-41, sw/o to Clear Fork disc at 6850-7036 ft, elev 3325 ft, anhy 1500 ft, Yates 2800 ft, Permian-Silurian contact 7985 ft, Montoya 8160 ft, Simpson 8380 ft, McKee sand 8700 ft, Waddell sand 8887 ft, Ellenburger 9030 ft, flow 577 bbls 42.3-gr, gor 630/1, natural via ½-in fr McKee perf 8700-50, 8775-90 ft, td 9072 ft, pb 8850 ft.

WEST CENTRAL TEXAS WILDCATS

Comanche County—Failure: O. B. Perot et al's W. C. Starks 1, 3100 fr nel 5000 fr sel Osa Hoxey sur, abnd 900 ft.

Shackelford County—Failures: Roeser-Pendleton-Conoco's Cook 1-A-36, 220 ft out nec s½ sw¼ E. T. Ry. sect 36, abnd 1550 ft.

T. P. Coal & Oil Co.'s Snyder 1, ne ne ne Lunatic Asylum Lands sect 36, elev 1406 ft, jkd 1115 ft, skid 25 ft west.

Stephens County—Failure: Roeser-Pendleton-F. Kirk Johnson's Frost 1, 355 ewl 330 snl ne¼ Blind Asylum Lands sect 68, elev 1301 ft, Bend 3554 ft, Ellenburger 4278 ft, abnd 4304 ft.

SOUTH CENTRAL TEXAS WILDCAT

Williamson County—Failure: H. C. Lefors' John Filla 1, 330 fr ne nlt/sel 138-ac lse, F. N. Stille surs 7 & 8, abnd 888 ft.

SOUTHWEST TEXAS WILDCATS

McMullen County—Failure: John F. Camp's

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Tulsa 3, Oklahoma

SITUATIONS WANTED

■ Petroleum Geologist desires connection with independent company or operator. 15 years experience in West Texas and New Mexico, 4 years Gulf Coast, 2 years South Texas. Address: Box 55, c/o The Oil Weekly, Houston, Texas, or call H-9592.

■ Experienced Warehouseman and Buyer of drilling and production equipment desires change. Sixteen years experience. Independent oil company or drilling contractor preferred or would consider sales work for export office. No objection to part time foreign assignment. Address Box 56, c/o The Oil Weekly, Houston, Texas.

WANTED TO BUY

■ WANTED TO BUY: Complete power rig suitable for workover. Compounded draw works. No junk wanted. Please give condition and price. Address: Box 57, c/o The Oil Weekly, Houston, Texas.

■ WANTED TO BUY: One 3-inch tubular leg derrick 72 to 87 feet high. Near Houston. Address: Box 58, c/o The Oil Weekly, Houston, Texas.

■ WANTED TO BUY: 2—80,000 bbl. used riveted steel Tanks; knocked-down; match marked; f.o.b. cars for our export. Give best price; complete specifications. J. Parker Thompson Company, 507-5 Ave., New York City.

J. W. Atkinson 2, 990 fr el 330 fr nl AB&M sect 125, 1320 n of Well 1, 320-ac lse, 2 mi ne Loma Alta fld, abnd 2100 ft.

Webb County — Failure: John F. Camp's Marris McLean 1, 1286 fr el 330 fr sl blk 7, Henry Jones sbdn E. Garcia tr, 600-ac lse, abnd 2308 ft.

LOWER TEXAS COAST WILDCATS

Brooks County — Failure: Sun's Mary M. Lasater 4-A, 330 fr nl 1150 fr el 1760-ac lse, HE&WT sur 349, 973 e ne Well 1, abnd in salt 5548 ft.

Brooks County—Dan Sullivan Distillate Discovery: Sun's D. J. Sullivan et al 5, 467 fr wl 12,000 fr sl 15,753-ac lse, Loma Blanco Gr, 1616 nw of Well 2, elev 87 ft, pay 7931 ft, perf 7831-39 ft, flow 3.9 mln gas, 60 bbls 60-gr cond, 5/16-in, gor 58,296/1, sip 3025 lbs, td 9927 ft.

Lavaca County—Failure: G. W. Strake-Tide Water's L. C. Wolfsdorff 1, 467 fr s&wl 223.5-ac lse, Miguel Muldoon sur 29, Sublime area, 2 mi nw Underwood disc well 1, abnd 9010 ft.

San Patricio County—Failure: Tom Graham's R. Morgan 1, 467 fr s&wl 853-ac lse, Stockton sur, abnd 6229 ft.

Victoria County—Failure: Monday Oil Co.'s

SERVICES

A large manufacturer having representation and offices in all oil producing states, calling on field superintendents, purchasing agents, and warehousemen, desires to contact a manufacturer who desires sales representation for his product. Address: Box 52, c/o The Oil Weekly, Houston, Texas.

POSITIONS WANTED BY SERVICE MEN

■ Honorably discharged serviceman, 25, desires job with oil industry, preferably South America, other foreign area. Experienced truck driver; kept stock records reports, inventory, issued ordnance items in service. Can type and file. Supervised 5 men. Arthur D. Keeton, 3 North St., S.W., Ardmore, Oklahoma.

■ Ex-serviceman wants employment with major company as supervisor or assistant in construction of refineries, gasoline plants, etc. 12 years expereince, references, age 38. Ralph J. Christian, 1310 Parker St., Amarillo, Texas.

■ Interested in job in oil industry, particularly personnel, advertising, public relations. Formerly employed in test department of large refinery, familiar with refinery processes, selling refinery products. U. of Illinois graduate, age 28. Available Feb., 1946. 1st Sgt. John E. Hennessy, 1512 E. 75th St., Chicago, Ill.

■ Ex-serviceman, 28, engineering degree Wisconsin Institute of Technology desires employment in oil industry, preferably geological department; without experience, but interested and reliable. Served in Army Engineers, worked for steel corporation, willing to retrain. M/Sgt. John T. Green, Fennimore, Wis.

Did you know that more men exclusively engaged in the drilling-producing business subscribe to **The Oil Weekly** than to any other paper? If you want to buy or sell good used equipment, a low-cost advertisement in this column will get action for you in a hurry. See rates below.

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston 1, Texas

C. E. Stubblefield 1, 660 fr nwl 467 fr swl 200-ac lse, Polito Castillo sur, abnd 6840 ft.

LOWER TEXAS COAST NEW PAY TESTS

Bee County—Burnell-Wilcox Pettus Discovery: Blanco-Buchanan's C. A. Henderson et al 1, 330 fr sly nw&swl 126-ac lse, R. C. Dallard sur, pay 3515 ft, perf 15 shots 3515½-17 ft, flow 35 bbls, ¼-in, very little gas, tp 200 lbs, td 3518 ft.

Willacy County—La Sal Vieja Distillate Discovery: Magnolia-J. S. Abercrombie Co.'s Harvey Geis 1, 660 fr e&sl 94.8-ac lse, 6304.8 e 660 n of swc Harding-Lendahl sbdn, San Juan de Carricitos Gr, 3 mi w of Raymondville, pay 8935 ft, perf 8935-55 ft, flow 86 bbls 54-gr, 18,500,000 gas, 18/64-in, gor 50,000/1, sip 3545 lbs, td 10,098 ft.

UPPER TEXAS COAST WILDCATS

Chambers County—Failure: E. R. Brann's Geo. F. Wilborn 1, 1980 fr el 660 fr nl sect 7 T&NO sur, 80-ac lse, abnd 10,010 ft.

Harris County—Failure: J. C. Wynne-W. E. Allaun's S. & H. Oil & Roy. Co. 1, 1457 fr el 500 fr nl J. H. Isbell sur, 30-ac lse, abnd 8510 ft.

UPPER TEXAS COAST NEW PAY TESTS

Ft. Bend County — Nash Dome Discovery: Danciger's Theodor Meier 1, 330 fr el 1900 fr sl 207.34-ac lse, 1700 fr nl 330 fr el H. N. Cleveland sur, pay 5893 ft, perf 38 shots 5860-75 ft, flow 240 bbls 30-gr, 1.3 mln gas, 12/64-in, gor 5000/1, tp 2000 lbs, cp 2300 lbs, td 5893 ft.

Wharton County—Lane City Discovery: H. W. Snowden's H. C. Cockburn 2, 200 fr nwl 316.7 fr swl sect 12, ne Well 1, 537-ac lse, S. Castleman sur, blk 105, pay 5430 ft, perf 16 shots 5433-37 ft, flow 85.25 bbls 25.8-gr, 3/16-in, gor 448/1, td 5377 ft.

EAST TEXAS WILDCATS

Hill County—Failure: Ray T. Rimmer et al's Morton 1, 500 wel 3450 nsl J. M. McCarter sur, abnd 1834 ft.

Navarro County—Failure: E. J. Moran et al's First Nat'l (Corsicana) Bank 1, 410 fr m/e/nel 250 fr m/n/sel of (north) T. O. Jones sur, elev 358 ft, Pecan chalk 1147 ft, Austin 1884-2368 ft, Woodbine 2812 ft, abnd 3225 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Bridwell Oil Co.'s Langford-Texaco 3, 1530 nsl 1630 wel blk 127, J. W. Harris sur, abnd 2292 ft.

A. R. Dillard et al's Herndon 3, 750 ewl 1884 nsl T. P. Ry. 1, A-434, elev 1151 ft, abnd 1706 ft.

Frank Wood and A. R. Dillard's Melugin 2, 850 nsl 1250 ewl S. P. Ry. 1, A-406, abnd 1111 ft.

Featherston & Donohoe's Frerich 1, 1487 snl 150 ewl sect 64, blk 3, Clark-Plumb sur, abnd 1284 ft.

John F. O'Donohoe's Garvey 1, 750 snl 1050 ewl TE&L Co. sect 1870, abnd 1100 ft.

Clay County—Failure: Continental's Donnell 1, 467 out swc sect 65, Freestone CSL sur, 2 mi s of Vashti, elev 1107 ft, Bend 5850 ft, Barnett 6460 ft, Ellenburger 6740 ft, abnd 7020 ft.

Cooke County—Failures: Seitz-Comegys & Seitz' Williams 1, 330 snl 1193 ewl Wm. C. Mathews sur A-770, elev 654 ft, base Trinity 1540 ft, Ellenburger 3594 ft, abnd 3750 ft.

W. H. Peckham et al's Thomason 1, 720 nsl 330 wel of 293-ac tr, T. Bell sur A-52, elev 738 ft, schist 2281 ft, abnd 2382 ft.

Knox County—Failure: Youngblood & Bob Foree's Bates 1, 330 out nec D&W sur 3, blk 2, elev 1408 ft, abnd 4510 ft.

Wichita County — Failure: Scott Bros. et al's Mackecheny 2, 330 out sec lot 18, Lge 2, Denton CSL, abnd 1263 ft.

WYOMING WILDCAT

Park County—Oil Discovery: General Pet.'s 1-29F, 29-47n-100w, Gooseberry area, testing prod, td 6095 ft.

WESTERN CANADA WILDCAT

Alberta Foothills—Jumping Pound Failure: Shell of Canada's No. 10-14-J, lsd 10 14-25-5w5th, Madison 10,639 ft, dry 10,898 ft.

WILDCAT STARTS

CALIFORNIA

Kern County: L. F. Gilmour, Operator, Derby 22, 33-30s-29e, Mt. View area, lcn.

L. F. Gilmour, Operator, Kirk 1, 6-30s-29e, Edison area, lcn.

U. S. Drlg. Co.'s Morris 2, 14-28s-20e, Belridge area, rur.

D. G. Vedder's 5-18, 18-27s-28e, Mount Poso area, lcn.

Western Gulf Oil Co.'s K.C.L.-San Emidio 2, San Emidio area, lcn.

San Luis Obispo County: K & M Drlg. Co.'s Kosanke 2, 17-25s-16e, lcn.

COLORADO

Rio Blanco County: Texas Co.'s Carney 3-34, ne sw 34-2n-102w, Rangely area, dr.

FLORIDA

Calhoun County: Pure's International Paper Co. 3, n&w 5-1s-10w, ru.

ILLINOIS

Clay County: Nation Oil Co.'s Owens 1, se sw ne 3-4n-5e, dr.

Richland County: C. R. Craft's Baley 1, nw ne sw 7-2n-14w, dr.

White County: R. E. Johnston's Baker 1, se ne se 8-7s-9e, dr.

INDIANA

Gibson County: R. E. Johnson's Clayton 1, nwc 4-2s-12w, dr.

Martin County: M. W. Brewer's Risacher 1, ne ne ne 19-3n-4w, lcn.

Pike County: Blaize Oil Co.'s Blaize 1, nw nw nw 12-1s-9w, lcn.

KANSAS

Barton County: David G. Gordon's Dirks 1, sw sw sw 6-20s-14w, dr 337 ft.

Butler County: W. J. Talbott's Lauck 1, ne se sw 28-27s-3e, rum.

Clay County: P. M. Polhamus' Lefert 1, ne ne sw 1-11s-3e, lcn.

Cowley County: G. M. Smith's Hillier 1, ne ne se 26-31s-7e, lcn.

Ellis County: El Dorado Ref. Co. et al's Rankin 1, nec 33-13s-20w, dr 2458 ft.

Cinoil Oil's Behrens 2, sw sw nw 1-14s-16w, dr 1040 ft.

Cities Service's Brungart 1, se ne se 30-14s-16w, mim.

Ellsworth County: Stearns et al's Diasbal 1, se se ne 3-15s-10w, lcn.

Harper County: Lion's Leeper 1, nw se ne 15-31s-8w, lcn.

Phillips County: Helmerich & Payne et al's Bowman 1-A, c nw se 3-5s-20w, lcn.

KENTUCKY

Henderson County: Ky. Nat'l Gas Corp.'s Arnett 1, 19-O-20, lcn.

Sun's Crafton 1, 12-Q-20, lcn.

Basin Drlg.'s Kasey 1, 8-P-23, lcn.

Union County: Joe Enberg's Blake 1, 22-P-20, lcn.

NORTH LOUISIANA

Franklin Parish: Gus K. Primos-C. W. Sharp's Butler 1, c sw nw 20-16n-8e, lcn.

Grant Parish: W. A. Romans, Tr.'s Mayson 1, 24-9n-1w, Wilcox test.

West Carroll Parish: Texas Pacific Coal & Oil Co.'s Singer Mfg. Co. 1, c se se sw 33-19n-9e, 6000-ft test.

SOUTH LOUISIANA

Acadia Parish: Amerada's Julia C. Richard D-1, start nec sect 75, th n 66° w 5848.2 th s 24° w 1386.6 to lcn in 75-7s-3e, 10,500-ft test.

Cameron Parish: Sohio's Matilda Gray 1, 3300 n 660 w of sec 12-15-12w, 10,000-ft test.

MICHIGAN

Allegan County: J. E. Hood's Kerr 1, se nw nw 20-1n-16w, lcn.

Bay County: Ervin Major's Taylor 1, sw sw ne 32-18n-3e, dr.

Kent County: C. E. Grime's Yeiter 1, ne se sw 19-17n-12w, dr.

Lake County: MacCallum and Craft's State 1, nw ne sw 27-17n-12w, lcn.

Mecosta County: Mich. Consol. Gas Co.'s Burden 1, c sw 35-14n-9w, lcn.

Osceola County: Sohio's Gas Unit 1, se nw se 13-17n-7w, dr.

Van Buren County: S. L. Godfrey's Steinman 1, nw nw nw 6-2s-15w, lcn.

MONTANA

Glacier County: Texas Co.'s Mabel Morrison 14, 660 n of swc of 22-35n-6w, Cut Bank area, lcn.

Petroleum County: Schrock's Fifer 3, sw nw nw 21-15n-30e, Mosby Dome extension of Cat Creek field, rurt.

Continental's Brown 1, se se se 17-15n-30e, rurt.

Dunlap's O'Dea 5-A, (OWDD) ne ne 20-15n-30e, lcn.

WEST TEXAS

Crane County: Humble's G. H. Cowden 1-B, c sw sw sect 14, blk X, CCSD&RGNG sur, Ellenburger test.

Pecos County: Helmerich & Payne's Barnes 1-A, 330 out of n cor H&GN Ry. 140, blk 10, mim for 1750-ft cable test.

WEST CENTRAL TEXAS

Brown County: Central Texas Gas Co.'s Will Cason 1, 450 snl 1000 ewl of J. M. Baker sur 155, 2850-ft cable test.

Callahan County: Woodley Pet. Co.'s Mrs. Marie Horn 1, 990 snl 330 ewl sect 105, BBB&C Ry. sur, 1800-ft cable test.

Fisher County: Harley Sadler et al's E. C. Whitaker 1, 550 nsl 440 ewl T&P Ry. 7, blk 21, mim for 4100-ft test.

Lampasas County: Danube Oil Corp.-J. R. McGill's Henry Brister 1, 660 out sec of Lucinda Brister sur, 1500-ft cable test.

SOUTH CENTRAL TEXAS

Guadalupe County: Leon V. Manry's Effie Williams et al 1, 330 fr n&el 95-ac lse, 4150 fr wl 4880 fr nl James Alley sur, lcn.

SOUTHWEST TEXAS

Webb County: John F. Camp's Marrs McLean 1, 1286 fr el 330 fr sl blk 7, Henry Jones sbdn of E. Garcia tr, 600-ac lse, 2400-ft test.

Sun's Isaac Hirsch et al 2, 2000 fr el 2700 fr sl sur 2030 1416.8 ne of Well 1 on same 2880-ac lse, 7500-ft test.

LOWER TEXAS COAST

Bee County: Smith, Story & Wood Corp.'s Nat. Bnk. of Commerce 1, 660 fr ne&nwl sbdn 36, Wangemann Rch, 80-ac lse, 5500-ft test.

Brooks County: Sun's Mary M. Lasater 3-B, 875 fr s&el GB&CNG sur 331, 3423 se of abnd Well 1 on same 799-ac lse, 6500-ft test.

Live Oak County: Herb E. Dirks et al's Mrs. E. Turner 1, 467 fr nw&nel 103.79-ac lse, B. B. Atkins sur 2, 4250-ft Vicksburg test.

Joe Stelzig's Joe Stelzig 1, 1320 fr wl 330 fr sl sect 1 in Geo. West Est. sw Nueces River, 3000-ft test.

Nueces County: Hiawatha O&G Co.'s Emmett Jones 1, 467 fr sl 3290 fr el tr 5 and 158-ac lse, Gregario Farias Gr, lcn.

Victoria County: Monday Oil Co.'s H. F. Witte 1, 343 fr nl 1025.8 fr sl 8188 fr el 429-ac lse, Leonardo Rodriguez Lge, 6400-ft test.

Willacy County: Baldridge & King's W. P. Lincoln 2, 467 fr el tr 12 and sh 3 and 735-ac lse 1244.5 s 467 w of I.B.C. Conc. Monument, dk.

UPPER TEXAS COAST

Brazoria County: Glenn H. McCarthy's Frank K. Stevens et al 1, 330 fr s&wl 208-ac lse, 12,930 w 2650 s of nec Geo. Robinson Lge, 11,500-ft test, ru.

Jefferson County: Glenn H. McCarthy-Phillips' Weisse et al 1, 750 fr el lot 21 660 fr sl lot 20 163.6-ac tr, G. W. Grammier sur, 10,500-ft test.

Liberty County: Roxie Wright's 542 fr wl 111 fr sl 108-ac lse, H&TC sur, sect 121, nw flk Dayton fld, 5500-ft test.

Matagorda County: Superior of Calif.-John H. Blaffer's W. J. Culbertson 1, start n cor sect 84 go 330 ne alg sel sect 81, P. Burnett & A. S. Sojourner sur, th 330 nw at ra to lcn, 11,000-ft test.

San Jacinto County: Fred W. Manning's Central Coke & Coal Co. 1, start at m/ely/cor J. Ferguson sur, go 3300 sw alg swly/l of sur th 2050 nw at ra to lcn in c 40-ac tr, 11,000-ft test.

Wharton County: J. F. Hutchins' Leslie Glaze 1, 2900 fr nl 330 fr wl sect 33 and 407-ac tr, WCRR sur, elev 108 ft, 6500-ft test.

NORTH TEXAS

Archer County: D. Houston Bolin et al's John Purcell 2, 1360 nsl 2000 ewl sect 80, Jefferson CSL sur, 3750-ft Strawn test, dr 750 ft.

Fain-McGaha-Geo. F. Strake's J. F. O'Donohoe 1, 330 out nwc s½ se¼ ATNCL sect 95, 6¾ mi se Mankins, 4500-ft Bend test, dr 200 ft.

Louisiana Land & Exploration Co.'s J. D. Lyles 1, 1869 ewl 2208 snl sect 7, Hooper & Wade sur A-234, 5¼ mi se Dundee, 5300-ft Ellenburger test.

Cooke County: R. C. Lipscomb et al's J. H. Cannon 2, 200 out swc J. F. Johns sur A-1569, 2¾ mi sw Bulcher, 1450-ft rotary test.

Jack County: J. M. Hickey et al's Chas. E. King 1, 330 snl 660 ewl sect 3310, TE&L Co. sur, 700-ft cable test.

Wichita County: Frank Wood et al's Ed. Foster 1, 600 snl 750 wel HT&B Ry. 2, A-633, 2000-ft rotary test.

Scott Bros. et al's J. L. Jackson 2, 150 nsl 1525 ewl labor 16, Lge 4, Denton CSL sur, 1250-ft rotary test.

Wilbarger County: Nat. Assoc. Pet. Co.'s B. W. Clancy 1, sw ne ne H&TC Ry. 26, blk 10, 5800-ft Ellenburger test.

Nat. Assoc. Pet. Co.'s C. M. Muller 1, se nw ne H&TC Ry. 55, blk 12, 5600-ft Ellenburger test.

Young County: A. C. Parks et al's S. A. Stowe 1, 2640 snl 1116 ewl sect 228, TE&L Co. sur, 1100-ft rotary test.

WYOMING

Converse County: Continental's McCrary 36, ne 8-33n-76w, Big Muddy area, ru.

Niobrara County: Continental's Apex 4, Well 13, 35-36n-65w, Little Buck Creek area, lcn.

Uinta County: Mountain Fuel's Unit 1, 8-16n-112w, Church Buttes area, may test 15,000 ft, rurt.

WESTERN CANADA

South Alberta Plains—Princess: California Standard's Princess-CPR 38-31-19-11, ne lsd 15 31-19-11w4th, ru.

SQUEAKS from the BULL WHEEL

Trail's End

"Do you neck?"
"That's my business, sir!"
"Ah, at last—a professional."

Children Are So Sweet

"What happened?" asked the new mother as she recovered from the anesthetic in the delivery room.
"Twins," said the proud papa.
"Oh, goody! Twenty more pounds of sugar."

Life's Little Compensations

"Daddy says there isn't another woman in the world like you, Momma."
"That's very flattering of him."
"And he says it's a helluva good thing, too."

Western GEOPHYSICAL COMPANY

COMBINING in one organization the largest and most complete geophysical research facilities in the world together with unexcelled equipment, experienced field crews and proven interpretation technique, Western Geophysical Company meets every requirement of operators desiring a *complete* and well-rounded geophysical service.

Western's seismic and gravity crews are now operating in all parts of the United States and in South America. Western service is available for surveys in any part of the world. Inquiries are invited.

Western GEOPHYSICAL COMPANY
HENRY SALVATORI, PRESIDENT
EDISON BLDG., LOS ANGELES 13, CALIF.
FIRST NATIONAL BANK BLDG., DALLAS 2, TEXAS
118 COMMERCE ST., NATCHEZ, MISSISSIPPI

Moment in History

"Willie, give me a well-known date in Roman history."
"Antony's with Cleopatra."

Wrong Diagnosis

"What you need, young lady, is a little sun and air."
"But, Doctor, I'm not even married!"

This Curious World

The man who lends money never has many friends — also, he doesn't need them.

The trouble with champagne is that it makes you see double and feel single.

Then there was the fellow who winked at the elevator girl and she took him up on the ninth floor.

A Matter of Taste

A sailor and his girl were riding horseback. As they stopped for a rest the two horses rubbed noses affectionately. "Ah, me!" sighed the sailor. "That's what I'd like to do."
"Well, go ahead. It's your horse."

Education

"Well, son, what did you learn in school today?"
"I learned to say 'Yes, sir' and 'No, sir,' and 'Yes, ma'am,' and 'No, ma'am.'"
"You did, eh?"
"Yeah."

Burning Retort

An Englishman and an American traveled in the same compartment on one side of the Liverpool express. The former spoke not a word to his companion, who was the only other occupant of the compartment. Only when the train was crossing Runcorn bridge did the American speak:
"Excuse me, sir, but your tie is riding up over your collar."
"Well, what of it?" curtly replied the Englishman. "Your coat pocket has been on fire for five minutes and I haven't bothered you."

Poet's Nook

He kissed her in the garden
It was a moonlight night.
She was a marble statue
And he a little tight.

Not Like the Rose

"Your girl is spoiled, isn't she?"
"No, it's just the perfume she's wearing."

Who Don't Toots?

"Do you like t'neck?"
"Naw, me for de drumstick, baby."

Time for a New One

On the morning that Senator Arthur Vandenburg was told of the birth of his first grandchild, a friend inquired how it felt to be a grandfather.
"I don't object to being a grandfather," said he, "but I can't say I feel so good about being married to a grandmother!"

Standco NO-SMOKE
STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See page 2808 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

"Best Bet Yet"
CLEAN LINES

A clean wire line helps your crew. They can work safer and better on a clean floor, free from drippings. With a Patterson-Ballagh Wire Line Wiper the line is stripped completely of mud and oil. A compact steel housing contains a spiral rubber which is inexpensive and easily replaced. The rubber wipes the line as it comes out of the hole. Sparkproof. Use one on every well. Now made of PBX, Patterson-Ballagh's new synthetic rubber.

See Composite Catalog

Patterson-Ballagh
WIRE LINE WIPERS
Los Angeles 1 Houston 10 New York 6

MEN IN THE INDUSTRY NEWS

Arno Behnke, former assistant superintendent of production for Amerada Petroleum Corporation in the Texas-New Mexico district and an officer in the U. S. Navy during World War I and II, has rejoined the company's Fort Worth office on special assignment work for the production department.

R. M. Hurt, superintendent of the Vicksburg, Mississippi, district for The Carter Oil Company, has been transferred to Seminole, Oklahoma, as assistant division superintendent of the Central Division. **E. A. Rose,** district superintendent of the Great Bend, Kansas, district, was transferred to Vicksburg to replace Hurt; **W. D. Maxwell,** district superintendent of the Elk Basin, Wyoming, district, replaced Rose at Great Bend.

Donald G. Burkhard, junior production research engineer in the Tulsa laboratories of The Carter Oil Company, has resigned to resume work on his PhD. degree at the University of California.

Commander E. Ernest MacGee, officer in charge of the chemistry section of the research and standards branch of the U. S. Navy Bureau of Ships during the war, has returned to Skelly Oil Company as head of the solvents department.

Lt. Col. H. P. Valentine has been named manager of dealer sales and operations for Mack-International Motor Truck Corporation.

Lt. Col. Valentine

Colonel Valentine comes to the Mack organization after service in the War Department, where he was chief of the Transport and Automotive Branch; production division headquarters, Army Service Forces, with staff responsibility for the army's huge war production of automotive, shipbuilding, construction machinery and railway equipment.

Prior to his war service, he was with the Chrysler Corporation for 11 years in key executive positions.

H. W. McKinnon of Shell Oil Company's West Texas division, spoke on "Ellenburger Developments in West Texas" at the November meeting of the Gulf Coast Chapter of the American Institute of Mining & Metallurgical Engineers in Houston, November 14.

William C. Frysinger and **John D. Kurtz** have returned to their duties as executives in the foreign sales department of The Atlantic Refining Company after wartime service with PAW. They had been stationed in Washington as assistant directors of the Foreign Supply and Distribution Division of PAW, charged with helping expedite the shipment of petroleum products abroad.

Frank Dreyer of Union Oil Company was elected president of the Pacific Coast Section, Society of Economic Paleontologists and Mineralogists. **Howard Anderson** of Standard Oil Company of California was named secretary-treasurer.

Dr. John T. Lonsdale, director of Bureau of Economic Geology of Texas, spoke on "Postwar Program for the Bureau of Economic Geology" before the Houston Geological Society November 5.

Adrian W. Smith has been appointed manager of the Restform Division of the Hewitt Rubber Corporation. For the past five years Smith has been executive assistant to **Burdette S. Wright,** vice president and general manager of Curtiss-Wright Corporation's airplane division.

SOUTHERN PUMPING UNITS

Unit No. V-140

Le Roi Power Unit — Viking Pump. Capacity 140 barrels per hour.

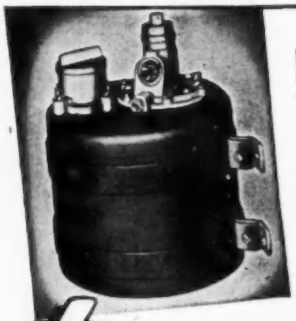
Complete units and replacements in Houston and Kilgore stocks.

SOUTHERN

Southern Engine & Pump Company

HOUSTON DALLAS SAN ANTONIO KILGORE

TOP CYLINDER LUBRICATION



FOR OIL FIELD ENGINES!

Wherever gas fueled engines are in service in the oil fields, you'll find Marvel Mystery Oil and the Marvel Inverse Oilers in service. For, Marvel Mystery Oil heads off the gumming that causes valve and ring sticking and when it is proportioned to the engine by the ingenious Marvel Inverse Oiler it assures vital top cylinder lubrication.

In high heat engine combustion areas, where ordinary lubricants break down, Marvel Mystery Oil sustains its remarkable efficiency. Ask us to show you how this specially compounded, detergent, high film strength lubricant combats the motor killing effects of the residues of fuel combustion. Used in connection with the Marvel Inverse Oiler, it provides an auxiliary system of top-cylinder lubrication that protects vital parts, extends motor life and improves performance. Ask for the facts. Emerol Manufacturing Co., Inc., 242 W. 69th St., New York 23, N. Y.

use the MARVEL INVERSE OILER WITH MARVEL MYSTERY OIL

Robert M. Darr has become advertising manager of Le Roi Company and Contaur Company.

Robert M. Darr

Darr joined Le Roi in January, 1941, as an instruction manual copywriter, becoming manager of that department a few months later. He attended the John Huntington Polytechnic Institute, studying commercial art and reproduction, and later continued his studies of advertising and merchandising at Marquette University. He spent four years with a large tractor manufacturer as a copywriter and layout man for instruction manuals, and gained additional sales and service experience with the L. D. Mather Company.

Allen F. Hansen, former scout for The Pure Oil Company at Roswell, New Mexico, and a three-year Army veteran, has rejoined the company as scout in West Central Texas with headquarters at Abilene.

Gene O'Connor, an Army veteran, has rejoined The Pure Oil Company as scout in the Shreveport district, relieving **C. S. Jackson,** who has been assigned to the Jackson, Mississippi, district.

Dr. J. T. Rettaliata, who recently became director of the mechanical engineering department at the Illinois Institute of Technology, will continue his Allis-Chalmers association as consultant on gas turbine development and similar problems.

Isador Glueck has retired after 31 years with Federated Metals Division, American Smelting and Refining Company.

William F. Bonner has been named general manager of Midco Tool and Supply Company, Oklahoma City, subsidiary of Aireon Manufacturing Corporation.

William F. Bonner

Bonner formerly was connected with the Burbank Hydraulics division of Aireon, where since 1942 he was contract administrator and later sales manager. A graduate of the San Diego Army and Navy Academy and of Stanford University, Bonner was the organizer, president and general manager of Sut Products Company.

Byron A. Duling and **James G. Hull** have been named Cleveland and Fort Worth region managers, respectively,

James G. Hull

Byron A. Duling

for Cummins Engine Company, Inc., Columbus, Indiana.

Duling has been affiliated with Cummins for nine years, the last three of which he was sales engineer. He succeeds **Fred W. Sparks,** who has become sales manager of manufacturing accounts for Cummins.

Hull has been affiliated with Cummins for six years, the last year of which he was sales engineer at the home office in charge of oil field accounts. He succeeds **Jay B. Chambers,** who resigned recently to become the Denver dealer for Cummins engines.

Robert L. McCormick has joined the engineering staff of The Standard Oil Company of Ohio and is located at Cleveland. Formerly a member of the research staff at Pennsylvania State College, McCormick will specialize in secondary recovery operations.

W. H. Barlow has resigned as director of the Carthage Field Engineering Committee and is in the engineering department of The Ohio Oil Company at Findlay, Ohio, specializing in reservoir studies. Barlow spent several years with Ohio before joining the Carthage committee. **W. L. Stanton,** formerly with the Arkansas Fuel Oil Company, has been appointed to succeed Barlow and is located at Carthage.

Hugh Bergin has joined the sales staff of Henry H. Paris, Distributor, at Houston. Bergin served for ten years as eastern division manager of Bridgeport Machine Company and during the war acted in an advisory capacity on oil well and pipe line equipment for the Advance Base Division, U. S. Navy.

Luis E. Kemnitzer has resumed practice as a consulting geologist in his former offices at Los Angeles with **L. W. Richards.** Kemnitzer was economics, trade and industry officer in military government in England, France and Germany.

Colin M. Stewart has been named general manager of Compania Goodrich Cubana, S. A. Havana, Cuba.

Compania Goodrich Cubana is associated with The B. F. Goodrich Company in the manufacture of tires, tubes and other rubber products in Cuba.

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See pages 2194 to 2211 in 1944 Composite Catalog

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ORBIT VALVE COMPANY

TULSA, OKLAHOMA

Deaths

William F. Clarke, 69, one of the first oil scouts on The Texas Company's Oklahoma staff whose record book was called "Bill Clark's Bible," died November 13, in Tulsa after a heart attack. A native of Cincinnati, he went to Oklahoma shortly after his graduation from Yale University and joined The Texas Company. After leaving The Texas Company he became landman for Cities Service Oil Company at Bartlesville and later joined Phillips Petroleum Company in the same capacity until his retirement several years ago. After moving to Tulsa two years ago he entered the employ of the Barnsdall Oil Company for a short time but was forced to retire because of ill health.

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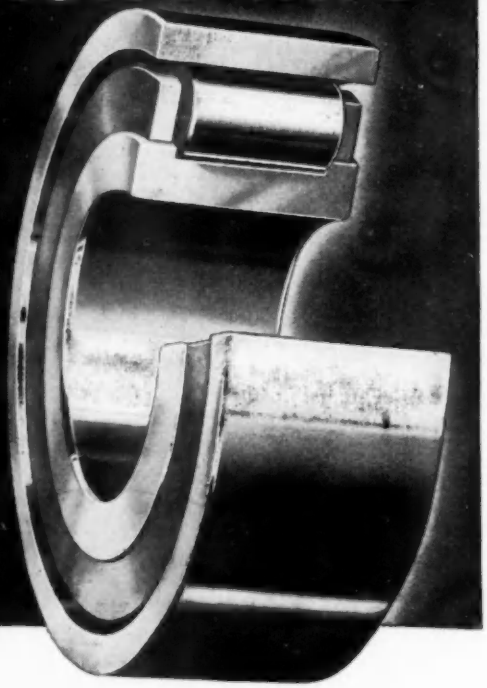

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AMERICAN *Heavy-Duty* ROLLER BEARINGS

John B. Schuyler, for many years prominently identified with the oil equipment industry on the West Coast, died of a heart attack October 29 in Los Angeles.

John B. Schuyler

A native of Pennsylvania, Schuyler went to California in 1920 from Casper, Wyoming, and during the ensuing 20 years was associated with several oil equipment concerns, including Gallagher Bolted Tank Company, Hillman-Cooney, Vernon Tool Company, and Baash-Ross Tool Company. In 1941 he joined PAW, Materials Division, Washington, D. C., later worked in PAW's Los Angeles office, then transferred to Denver as director of materials in District 4. He had just returned to Los Angeles after completing his PAW assignment when he was stricken.

Don S. Bowers, president of W. C. Norris, Manufacturer, Inc., Tulsa, died November 11 following a heart attack. He was 58.

Bowers joined the Norris organization in 1915 and was elected president in June of this year on the death of **W. C. Norris,** the founder. He was born in Caneyville, Kansas, and attended Hanover College in Ohio, after which he was employed for a short time with Rock Island and Missouri-Kansas-Texas railroads. In 1909 he joined Gulf Oil Corporation in Mexico and remained in that country until 1913 when he was transferred to the company's Tulsa office.

Norris was a director of the National Association of Manufacturers and was an active civic leader in Tulsa. He was also a regent of the Nomads Club.

Frank C. Angle, manager of the general machinery division field sales offices, Allis-Chalmers Manufacturing Company, Milwaukee, died October 25.

Angle, 45, had been field sales manager since 1944. He joined Allis-Chalmers in 1929 as a salesman in the Chicago office. In 1934 he joined the companies' San Francisco office and became manager of that office two years later. In 1943, he was appointed Pacific regional manager.

William K. Hall, 50, director and general counsel for the Texas Pacific Coal & Oil Company, died November 13 in Fort Worth. He was a native of Austin, and attended the University of Texas.

C. B. Hudson, 54, claim and right-of-way agent for Humble Oil & Refining Company, died November 13 in Houston.

1—Non-Magnetic Drill Collar

Sperry-Sun Well Surveying Company, Houston and Long Beach, California, has recently added the S-S Non-Magnetic Drill Collar rental service to its line of field services.

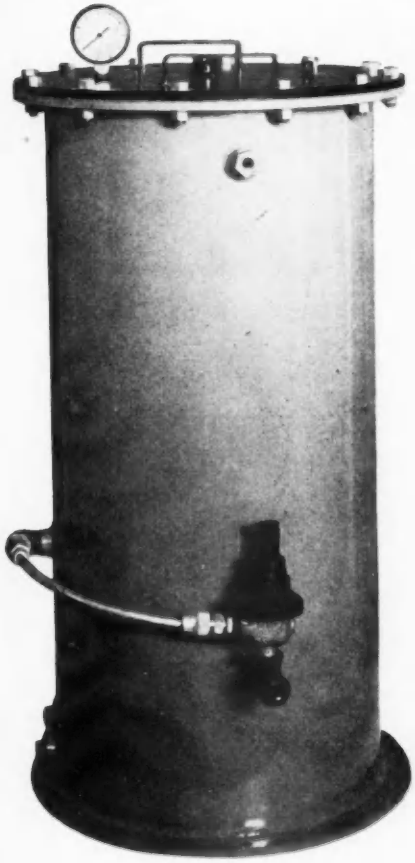
Use of this drill collar permits the taking of directional single shot records inside of the drill pipe, without removing the pipe from the hole or raising the string.

The drill collar is located immediately above the regular bit and the non-magnetic section carries the directional single shot instrument and protects it against both loss and damage. The records obtained in this manner are said to be more accurate because the instrument, being seated inside of the drill collar, is always parallel to its walls.

"K" Monel metal is used in construction of the drill collar, because of the high physical properties of this metal.

The collars are made in standard sizes and are now available in six-inch and 6¾-inch outside diameters.

2—Fuel Filter



W. L. Clay, Manufacturer, Oklahoma City, has perfected the Sun Diesel fuel filter, said to assure clean Diesel fuel where it is used.

A feature of the filter is the relief valve which is connected onto the oil presure line at the filter intake. At the instant the volume and pressure rises above the regulated flow to the filter medium chamber, the surplus oil starts by-passing into the outer or circulating chamber.

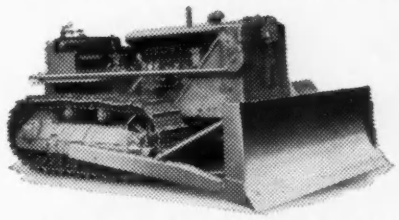
The oil enters the annular space in the outer chamber at crank case temperature where the hot oil radiates its heat throughout the inner, or filter chamber, a feature which provides the heating facility essential to proper filtration. The pressure oil line leading from the pump to the filter operates at 35 pounds and up, since the flow feeding the filter medium chamber is regulated at 15 or 20 pounds. Therefore, most of the oil flow is by-passed through the relief valve into the outer chamber where it is carried back to the crankcase again.

It is claimed that this filter thoroughly cleans the oil and activates a clean and perfect film of oil encasing all wearing parts and constantly prevents abrasive friction to any traveling parts of the engine.

3—Bulldozers, Scrapers

Caterpillar Tractor Company, Peoria, Illinois, announces production of "Caterpillar" cable-controlled bulldozers and scrapers.

The bulldozers and scrapers are



matched in capacity to the power of the tractor and also are matched in design, material and workmanship. The bulldozers and scrapers are for "Caterpillar" Diesel D8, D7 and D6 track-type tractors.

Features of the scrapers and bulldozers include: balanced design, great capacity, rigid construction, elimination of "A" frame, reinforced blade, easy digging, enclosed operating cables, long-life cutting edges, easy blade adjust-

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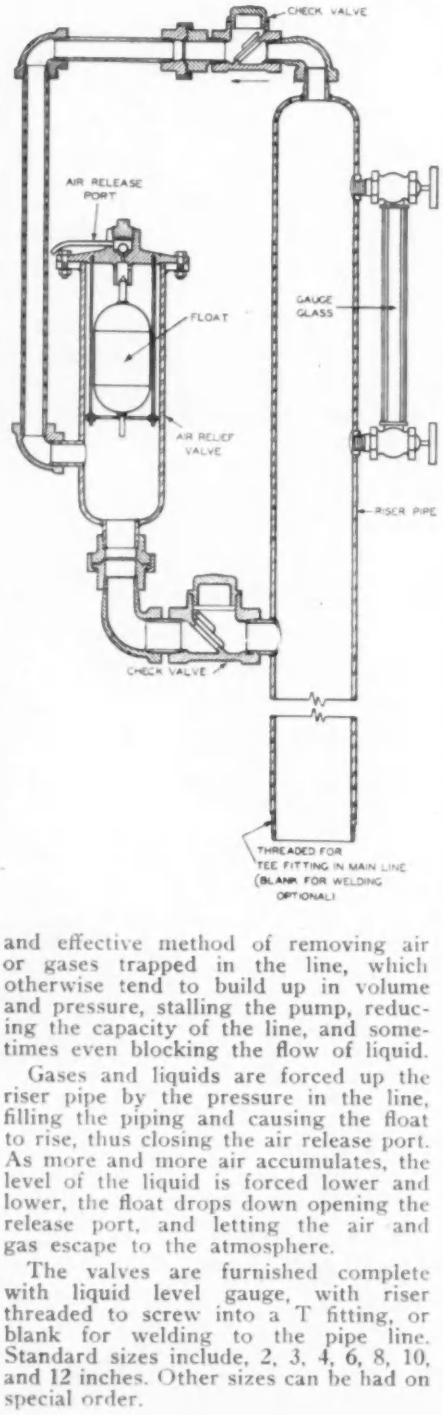
4—Air Relief Valve

Oceco Division of The Johnston & Jennings Company, Cleveland, announces the Oceco V-404 Air Relief Valve, designed for installation at the high points of pipe lines.

The valve is said to provide an easy



and effective method of removing air or gases trapped in the line, which otherwise tend to build up in volume and pressure, stalling the pump, reducing the capacity of the line, and sometimes even blocking the flow of liquid.

Gases and liquids are forced up the riser pipe by the pressure in the line, filling the piping and causing the float to rise, thus closing the air release port. As more and more air accumulates, the level of the liquid is forced lower and lower, the float drops down opening the release port, and letting the air and gas escape to the atmosphere.

The valves are furnished complete with liquid level gauge, with riser threaded to screw into a T fitting, or blank for welding to the pipe line. Standard sizes include, 2, 3, 4, 6, 8, 10, and 12 inches. Other sizes can be had on special order.

Use the Coupon

For free copies of Manufacturers' Literature or more information on products described on these pages, use the convenient mailing coupon on page 109.

Literature

5—Electrode

Ellwood Products Corporation, Ellwood City, Pennsylvania, has issued a bulletin on Ellpro Cutting Electrodes for underwater or surface cutting.

These electrodes were developed by Ellwood engineers and the U. S. Naval Experimental Station at Annapolis. Ellpro Cutting Electrodes can be used with any portable welding set by adding a tank of oxygen. Their use underwater is said to result in expert, speedy, safe and inexpensive cutting at depths up to 280 feet and more.

Manning, Maxwell and Moore Plans New Plant in Tulsa

Manning, Maxwell & Moore, Inc., manufacturer of oil field valves plans a permanent plant in Tulsa. The company operated a temporary establishment during the war and is the first of the new plants which were established here during the emergency to reconvert entirely to peacetime operations. The company began operations in Tulsa in 1943 manufacturing valves for high octane gasoline and synthetic rubber plants.

The firm is constructing a two-story fireproof and air-conditioned office building at the plant site which occupies about 20,000 square feet. It will add another 10,000 square feet of floor space and expects to start producing a new type of gauge for industry sometime after January.

Milwaukee Firm to Handle Fairbanks-Morse Pumps

Appointment of Milwaukee Machinery Company, Portland, Oregon, as distributor for Fairbanks-Morse Turbine Pumps, has been announced by the Seattle branch of Fairbanks, Morse & Company.

The Portland firm also will handle service and sales for Fairbanks-Morse Propeller and Mixflow Pumps and Westco Horizontal Turbine type pumps. The pump department will be headed by W. H. Perry, who was with the Dallas branch of Fairbanks, Morse for many years.

The Seattle branch also announced that Cascade Machinery Company of Seattle will handle all Fairbanks-Morse pumping equipment and act as distributor for Fairbanks-Morse motors and electrical equipment. The pump department of Cascade will be managed by Clyde A. Retter.